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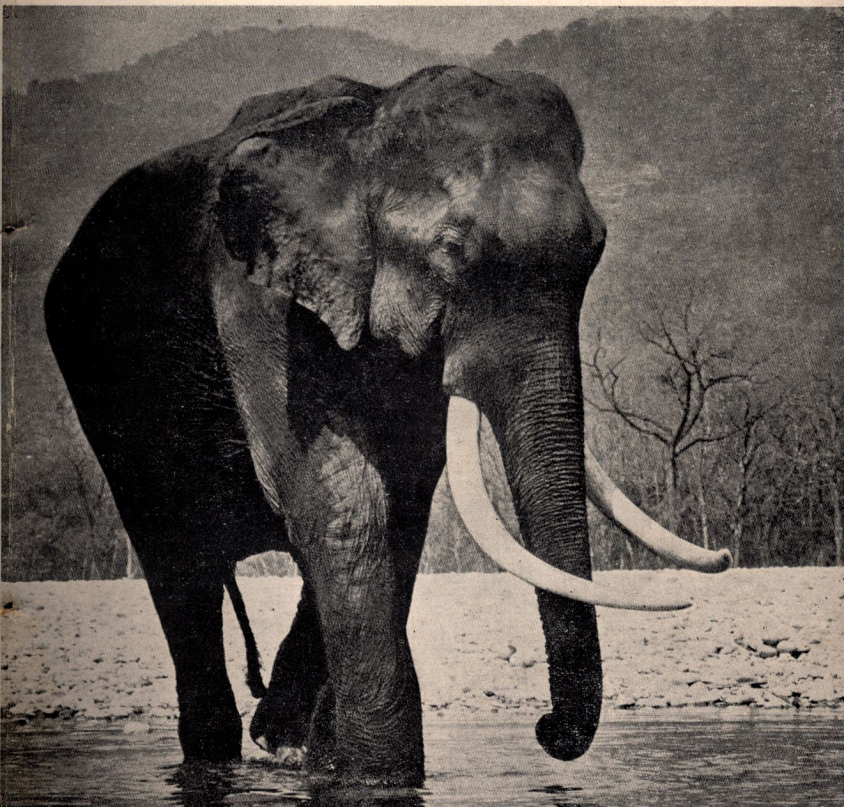
MANAS TUSKER —Photo Kailash Sankhala



The Society at its Annual General Meeting held on 27-4-1975 very reluctantly decided to raise the annual membership subscription to Rs. 25/- with effect from 1-4-1975 to meet the rising prices of paper, printing, block making, photos etc. for publishing CHEETAL and other expenditure of the society. The society found itself unable to carry on its work without raising the subscription. Almost all other similar societies have increased their subscription to much more.

You are, therefore, requested to appreciate the situation and send Rs. 25/- for the year 1975-76. This subscription fell due on 1.4.1975. An early payment is requested.

Annual Subscription for CHEETAL only has also been raised to Rs. 20/- for the above reasons. You are requested to send the same at your earliest.

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URGENTLY WANTED TO BUY

The small pamphlet (about 6″×9½″) in green wrappers containing 52 pages.

RULES ON SHOTING

OR

USEFUL INSTRUCTION ON SHOOTING

Published at Mirzapore, 30th March 1885
Printed at the Railway Service Press, Allahabad.

F.P. WILLIAMSON
310 WILDWOOD DRIVE EAST
SAN ANTONIO, TEXAS 78212, U.S.A.

President's Speech at the XVI Annual General Meeting of the Wild Life Preservation Society of India at Col. Brown School, Dehra Dun on the 27th April, 1975

Guests, Members and Friends,

The Society has been faced with problems that have hampered its work but we have come out none the worse for it. The period was a challenging one with frustrations and achievements.

I am happy to inform you that His Excellency Shri Fakhruddin Ali Ahmed, President of India, has very kindly accepted our request to be the Patron-in-Chief of the Society in succession to his illustrious predecessor in office, Shri V.V. Giri. We are grateful to him.

I am also happy to inform you that three of our members have been honoured by the Government of India in this year's Republic Day Honours List. They are Padma Bhushan Dr. C.D. Deshmukh, Padamshri Arjan Singh and Padamshri Ruben David.

With the passing of the Wild Life Protection Act (1972) by the Government of India and its acceptance by all the States except Assam, Jammu & Kashmir, Meghalaya and Nagaland. The Wildlife scene has not been a disappointing one. We hope the remaining States will accept the Act very soon and it will be extended to Sikkim on the earliest occasion. Sikkim has a varied, much endangered and rare wild life.

Project Tiger has completed two years on 31st March and is gaining impetus. Part of the million dollars promised for Project Tiger by the World Wildlife Fund has been received in the form of Motor Vehicles and other equipment and two speed boats for antipoaching operations in Sundarbans. Enforcement of the Wildlife Protection Act is the crux of the problem and commercial poaching a menace. To meet this the Society has donated guns and rifles worth more than fifty thousand rupees to Project Tiger areas in Assam, West Bengal, Rajasthan, Madhya Pradesh and Bihar. This was made possible by the receipt of a donation of rupees twenty-four thousand through Dr. Griezmik of Serengeti fame.

The problem before the Society has been to find enough rupees to finance its activities and meet the increasing cost of publishing "CHEETAL" which has gone up by more than three times and the runaway prices of material needed for efficient running of the organisation. Rents, taxes and salaries have also gone up out of all proportion. We will strive to raise funds to meet the situation. More members have been lost and fewer persons have joined the Society. My suggestion is that each of us makes at least one member every year.

I am very grateful to the members of the outgoing Executive Committee who spared no pains to make the period a successful one.

I am also obliged to the office bearers and the staff but for whose help we would not have achieved the measure of success that we have.

In the coming months we will do our best to adopt a Wildlife Educational Plan for students and we plan and hope so meet regularly at least once every two months if not more often. Tours to National Parks and Sanctuaries by members are also being organised and with your co-operation and help we hope to promote the cause of wildlife conservation and save our vanishing wild life heritage for generations to come.

I am grateful to the Principal, Col. Brown School for permitting us the use of the building and grounds for this meeting and standing Tea to members and guests and thank him for the same.

Col. Pratap Singh
Malvendra of
Nabha

His Royal Highness the Prince of Netherlands visited India in the first week of April, 1975 in his capacity as President of the World Wildlife Fund. He was invited by the Government of India to view the progress made by 'Project Tiger in India'.

Children from eight European countries came as guests of the Government of India. They were selected at random from European children who raised more than half a million dollors for Project Tiger. They were joined by Two Indian children—Akila Seshayee from Calcutta and Ashish Sochedeva from Bangalore who were selected in a blind draw from among the four who painted prize winning entries for the International drawing competition. The party visited Corbett, Ranthambore, Sariska and Bharatpur. The tiger obliged them with an audience in Sariska.

Nilgiri Thar:

With the declaration of Eraviklam-Rajmali area as a widlife sanctuary by the Kerala State Goverment, hope for the survival of Nilgiri thar has been revived.

Wildlife and Legal Protection

By

RANJITSINH

Deputy Secretary, Ministry of Agriculture (Forest & Wildlife) and Director of Wild-life Preservation, Govt. of India, New Delhi

Hunting, or to use a modern connotation the exploitation of wildlife has been the practice, past time or the profession of man from the time he became man from an ape, and even before. Through these aeons of time, the survival of wildlife from human depredation has been due to three broad factors. Firstly, the inaccessibility of the areas where wildlife existed and the inefficacy of the implements and methods employed by man in the hunting of animals. Secondly, the religious beliefs and sanctions which have prevented man from hunting certain species of wildlife, or all wildlife in certain areas, and lastly the legal sanctions which curbs the free-play of the human instinct to hunt.

2. It is my task here to briefly highlight the laws relating to wildlife preservation in ancient times as well as in the present.

3. We know from the exhortations of Ashoka in his pillar edicts as to how he restricted the daily slaughter of animals and birds for the royal kitchen. In Kautilya's Arthashastra there is mention of Abhayaranayas or wildlife reserves with interesting details as to how the preservation of these should be effective.

4. The Chola Kings in the South and King Harshvardhana in the North are known to have been the great protagonists of wildlife preservation. However, there was no codification of wildlife legislation. The order of the ruling monarch held sway, and these were dependent upon the interest that the monarch had in sport as well as upon his religious beliefs. The Jain and the Buddhist kings were particularly vigilant in discouraging and preventing of all blood-sport. However, the practice of trapping wildlife indulged in by the community of Pardhis was recognised and aquiesed in. With the Moghuls hunting and sport were a passion and severe were the punishments imposed upon poachers who entered the royal hunting grounds.

5. Unlike in America hunting in India has always been the privilege of the few. It was an unwritten law that the right to hunt only belonged to the ruler, his coterie, and to the nobility. This was an accepted norm not only in the princely States of India but in the British administered areas as well where the right to hunt was bestowed only upon the administrators and the military. The efficacy and the universal acceptance of this practice is borne out the fact that though there was no legislation for the preservation of wildlife till only a hundred years ago, wildlife continued to thrive even near inhabited regions and on cultivated soil.

6. The earliest legislation pertaining to wildlife is the Elephant Preservation Act, 1879, Perturbed by the decline of the elephant population partly due to elephant hunting and kheda operations and partly due to fast shrinkage of elephant habitat, the British administration in India passed this Law. The revival of the elephant herds was slow but marked, and it is to this law primarily that we owe the fact that today the elephant in India is not facing extinction. The law laid down that the elephant will not be shot even when raiding crops. Only a declared rogue could be destroyed.

7. Next came the Wild Birds and Wild Animals (Protection) Act, 1912, a small law of 9 sections and two schedules. It extended to the whole of British India excluding British Baluchastan, Santhal Parganas and the Pargana of Spiti. It laid down provisions for closed seasons and listed animals and birds which may be hunted under a licence. Killing and trapping in contravention of the provisions of the law attracted a fine of Rs. 50/- only, and in the case of a second offence, a punishment of imprisonment which may extend up to one month or a fine which extend up to Rs. 100/-, or both. However, killing or capturing of animals by any in person defence of life or property was deemed to be exempted from the provisions of the Act.

8. The third All India legislation which had bearings upon wildlife preservation was the Indian Forests Act, 1927 which laid down that hunting, trapping & poisoning in reserve forests & protected forests was illegal unless permitted by license. Under the provisions of the Forest Manual which was framed under this Act, various rules regarding reservation of hunting blocks, license, fees, royalties on animals killed, etc were laid down.

9. In many of the larger Indian States also, notably J. & K., hunting rules and regulations were prescribed.

10. The Bengal Rhinoceros Act 1932 aimed at the preservation of the fast dwindling numbers of the Indian rhino in the province of Bengal, a single-animal-preservation law on the model of the Elephant Preservation Act of 1879.

11. An interesting analogy could be drawn here between the hunting laws of this[s] period in India and those in the United States of America. As has been stated before, unlike the hunting in America the hunting in India was a privilege of a selected few, Animals which were prized trophies for hunters, such as the lion, the tiger, the elephant, the rhinoceros, and were given special status and the hunting of these was zealously circumscribed. Carnivora by and large were specially preserved as these were the main objectives of the sportsman. In America hunting was a past time of even the common man and since the prime objective of the ordinary hunter in America was one of the five varieties of deer or one of the four variteties of wild sheep, and small game, the legislation put these, at a premium and strove to reduce drastically the numbers of the predators, viz.,the cougar

the wolf, the coyote and the fox, who were competing with man as hunters of the deer the sheep and the birds. Bounties and rewards were placed on these predators.

12. Prior to independence wildlife in India was for the sake of enjoyment of the elite the objective behind wildlife preservation was propogation of sport. For the common man there was no involvement with wildlife preservation, and he had no stake in the efforts of such conservation. Indeed, for him wildlife was often a loss that he had to bear, especially from those wild animals which destroyed his crops or cattle.

13. However, the idea of preserving wildlife for its own sake and of setting aside certain invioble reserves came up with the National Parks Act of U.P. which established the Hailey National Park in 1936, subsequently renamed as the Corbett National Park. Various sanctuaries such as Kaziranga and Manas in Assam, the Banjar Valley Reserve which subsequently became Kanha National Park, in M. P., the Taroba Reserve in Chanda (Maharashtra) came also to be established in British India. The Indian States also had some wonderful reserves where no hunting was permitted. In The Ban Bihar and Ram Sagar Sanctuaries of Dholpur (Rajasthan) wild animals, used to flock to the car of the Maharaja.

14. With the advent of independence came a number of State Wildlife Acts. The Bombay Wild Animals and Wild Birds Protection Act, 1951 is the progenitor of the Maharashtra and the Gujarat Wild Animals and Wild Birds Protection Acts. The IBWL had requested the other States of India to pass legislation on the lines of these Acts. However with the exception of the Union Territory of Goa, this was not done. In most of the States the hunting rules and regulations which were prevalent in British time and which were framed under the Indian Forest Act, 1927 and the Wild Animals and Wild Birds Protection Act 1912, continued to remain in force. Needless to say that these regulations were completely out of date and not in keeping with the needs of the prevalent situation. The fines and penalties were almost infenitesimal.

15. Till 1950 all the legislations that were framed in this country was aimed at the regulation of hunting and to a certain extent, that of trapping. This of course is only one aspect of wildlife preservation. The factors of habitat management, the creation conservation and management of sanctuaries and national parks, and the control of taxidermy and trade in wildlife are also very important aspects, which had to be covered by law. As has been pointed out before, a very important headway was made in U.P. with the setting up the Hailey National Parks. Similar laws were now passed in Madhya Pradesh under which were created the Kanha National Park and subsequently the Shivpuri and Bandhogarh National Parks. In Maharashtra a National Parks Act was passed in 1971 and the Taroba National Park and Boriveli National Park were

brought within its purview. The Assam National Parks Bill was passed in 1966. However, Kaziranga has not yet been declared a National Park under this Act though the intention to do so has been notified under its provisions. Assam has also passed The Rhinoceros Act, 1954; and the Elephant Preservation (Assam Amendment) Act, 1959 amending the Elephant (Preservation) Act, 1879.

16. A need had long been felt to have a comprehensive legislation on wildlife which would cover not only hunting but all the other aspects relating to creation and conservation of sanctuaries and national parks, control of trade and taxidermy and a law which would not only be applicable to reserve and protected forests as the earlier laws had been, but to all wildlife on any land, private as well as Government owned. However, wildlife and forests are State subjects and feature in the 7th Schedule of the Constitution of India, The Union Government has no powers of making laws for the States in respect of these subjects except as provided in Articles 249 and 250 of the Constitution. Only when the States have passed resolutions in their respective legislatures empowering the Parliament to legislate on their behalf, can such laws be passed by Parliament. A request was made to all the States to pass such resolutions and the States of Andhra Pradesh, Bihar, Gujarat, Haryana, Himachal Pradesh, Madhya Pradesh, Manipur, Panjab, Rajasthan, Uttar Pradesh and West Bengal passed such resolutions. Subsequent to the passage of the Bill in the Parliament, the States of Kerala and Mysore passed resolutions adopting the Act to their States.

17. The salient features of the Wildlife (Protection) Act passed by Parliament in 1972 are :

"It provides for the setting up of State Wildlife Advisory Board an appointment of Wildlife Preservation offiicer and staff, their powers and duties, and lays down regulations for hunting and trapping of animals and birds, and for the creation, effective management and conservation of Wildlife sanctuaries. Taxidermy and trade in wild animals and their produce including meat is to be permitted in accordance with valid licences and upon prescribed premisses only. Rules indicating the procedure and guidelines for the grant, renewal suspension and cancellation of such licences will be framed under the Act. Dealers will be required to declare their stocks on coming into force of the Act and will have to submit periodic returns to prescribed officers showing therein their transactions, and the said officers may inspect their records and articles for sale and affix identifying marks. Persons owning animals and birds and their produce in respect of Schedule I only, would also have to declare their stock and obtain possession licences, and the export, import or transfer by gift, sale or otherwise to any person would only be possible after obtaining permission from the Wildlife Preservation Officer of the concerned area. This is to ensure that certain endangered animals and birds and their products

which are to be sold internally or abroad, have been obtained legally. The serving of wildlife meat in eating houses will be permissible only under a licence; and if any person, dealer, taxidermist or restaurant owner found in possession of any animal, animal article, or trophy in contravention of the provisions of the Act, the onus of proving that the articles in question were obtained legally, will rest upon the person changed with the violation of the provisions of the Act. This is a very important aspect, as it is impossible to prove, as is required under the law today, that the trophy in question was illegally hunted at a particular time and at a particular place in Government forests. Now the accused shall have to establish, once the trophy has been seized from him, that it has been lawfully obtained. Provision for search, seizure, entry and arrest, and confiscation after conviction of contraband animals and produce and articles used in the committing of the offence, have also been made. The hunting, trapping and trade in certain animals, birds and reptiles which are very rare or critically endangered will be completely banned, as well as in articles made therefrom. These will be regarded as fully protected and contravention of the provisions of the Act pertaining to these animals will result in more stringent punishment. A minimum period of imprisonment of 6 months and a minimum fine of Rs. 500/- has been provided for such offences."

Now having surveyed the current wildlife legislation its adequacy may be considered. Here two issues would have to be dealt with – firstly, whether the legislation is comprehensive or not—whether it covers all the requisite aspects or not; and secondly, whether it is effective or not. The scope and the fields covered by the law have been mentioned by me earlier. It does deal with hunting and trapping trade and taxidermy, and the Conservation of the habitat in sanctuaries & National Parks. What it does not deal with is the habitat of wildlife in areas other than Sanctuaries and Parks. This is left to the Indian Forest Act of 1927. This was done as it was realized that in Reserve and Protected forests outside Parks and Sanctuaries forestry operations would continue. The title of the Act should have been wildlife "Conservation" rather than "Protection". However the word used in entry 20 of the VIIth Schedule of the constitution is protection of Wiid Animals & Birds, and hence upon the insistence of the Law Department, the Act had to be named the Wildlife Protection Act.

Now let us consider the second aspect, the efficacy of the wildlife legislation today. However good or exhaustive a law may be, it is only as good as is enforced. In the prinely states there were hardly any laws, yet wildlife protection was very effective. There were few weapons owned by the common man, but the awe and fear of authority was sufficient to the potential poacher to steer clear of any such temptations. Had it not been for the

zealous protection afforded to the Indian Lion in the State of Junagadh,the Barasingha in Kashmir, and the wild buffallo in Bastar, they would long ago have been extinct.

The Wild Birds and Wild Animals Act 1912, & the rules made thereunder, incomprehensive though they may have been, did provide that there should be no trapping of certain species of wildlife. Yet captured animals and birds, their meat and skins are on open sales in bazars, and Taxidermists continue to cure skins whose origin is unaccounted for. The Wildlife (Protection) Act of 1972 covers much more ground than its predecessors, puts the burden of proving the Legality of the trophies seized upon the accused and lays down stringent punishments including a mandatory imprisonment of six months in addition to a minimum fine of Rs. 500/- in cases of offences related to certain species of wildlife. However, the Act will have to, by and large, be implemented by State Government agencies. The future of the wildlife of India will depend upon how effectively will they be able to enforce this legislation.

———

No Tiger Hunting in Malaya

Though tigers are not included on the list of animals prohibited from being hunted, it is the policy of the Ministry of Agriculture not to issue any licences for tiger hunting, and to intensify its compaign against the trapping of tigers and other wild animals in malaya.

* * * *

Siberian Tigers Increase

The latest tiger census in the Maritime Soviet Far East puts the number at between 110-120 showing a three to four times increase since 1940—thanks to effective protection.

The Gharial

By

T. Venkateswarlu

Zoological Survey of India, Southern Regional Station, Madras-4.

The Gharial (*Gavialis gangeticus*) is the oldest of living Crocodiles. It is now the sole living representative of the genus *Gavialis*. Fossil forms have been described from the Pliocene deposits of the Siwalik hills and Narbada valley (Smith, 1931). Now it occurs in the Indus, Ganges, Brahmaputra and Mahanadi and their tributaries and Kaladan river in Arakan, Burma (Smith, 1931).

Shape of the body

The Gharial has a long, narrow slender snout dilated at the end which resembles a 'ghara' or earthen pot. The length of the snout is at least three times the breadth at its base.

Food and habits

Smith (1931) has given some account of its food and habits. Gharials are found only in rivers. Their food consists chiefly of fish and sometimes birds, and they have been known to seize goats and dogs. Very occasionally they will attack man, but they are not much feared on this account. On the contrary they are said to escape into water at the sight of man. The discovery of human ornaments in their stomachs does not necessarily indicate man-eating habits. They are mostly acquired from corpses devoured by these animals. In winter months and during hot weather they spend most of the day basking in the sun on sand banks, with extended jaws, but as the sun goes down they slip into water. During the rains they are not much in evidence and, owing to the flooded state of the Ganges, many of them migrate, to smaller streams. The Gharial has the crocodilian habit of floating in the stream with only the eyes and the tip of the snout above water.

Breeding habits

Very little is known about the breeding habits of Gharial. They lay about 40 eggs in sand banks. They measure about 3½ inches in length and 2½ inches in breadth. The young ones which appear in March and April, are about 15 inches in length.

Some records

There are only few authentic records on the occurence of this species, the most important of which are by Abdulali (1957), Barton (1929), Burton (1955), Pitman (1925), Short (1921) and Smith (1929). Recently Biswas (1970) has done some preliminary survey of this species in the Kosi river and gave an account of its distribution in North India.

The author was fortunate enough to make some observations on a Gharial in 1970. On 21.11.1970 night a single Gharial was caught by a fisherman, from the Badar Ghat (Patna, Bihar), at the confluence of the river Gandak with river Ganges. It was caught in a fishing net, locally called 'Gochai'. It measured about 8 feet and its approximate weight was about 100 kg. The dorsal surface is olive brown and ventral surface in whitish yellow. There are six cross bands on the body.

In the words of Burton (1955), "the longest crocodile (Gavial) on record in the Society's Journal (Bombay Natural History Society) is the 21 ft. 2 in., specimen shot in the Ghagra as reported by Pitman (Vol. 3: 703, 1924)". Barton (1929) recorded earlier a specimen of 16 ft. 6 inches. When compared with above the present specimen might be a young one.

It appears that the Gharial might have migrated in the rainy season from river Gandak. Biswas (1970) states that in rainy season Gharials migrate upto Allahabad in river Ganges.

The Gharial was very ferocious even though its jaws, limbs and tail were tied with a rope. It was alive in the possession of the fisherman for 5 days and later sacrificed and disposed off. The fisherman who caught the Gharial stated that he had caught 3 more specimens in 1968 from the same spot in river Ganges earlier. Local people say one can easily spot a Gharial in river Gandak if he is a bit lucky.

Uses of skin

The skin of Gharial has got much economic importance. It is used in the manufacture of belts, shoes, wallets, ladies hand bags and many miscellaneous articles which have got much demand in Western countries. Its flesh is also relished by certain section of people.

Acknowledgements

My thanks are due to Dr. K.C. Jayaramakrishnan, O/C. S.R.S., Z.S.I., Madras and Shri Bholanath, O/C. G.P.R.S., Z.S.T., Patna for their kind help and encouragement.

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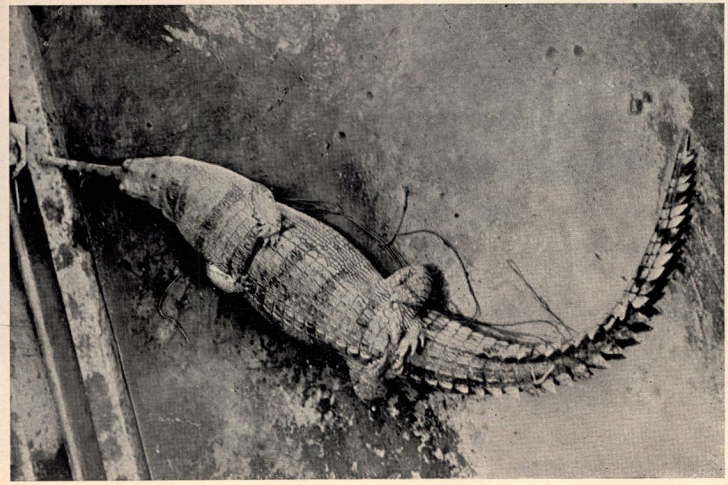
← Indian great horned owl at nest
(Bubo-Bubo)

The Gharial
(*See Page No. 9*)
↓



Photograph by M. M. Chatterjee

One day old chukar partridge.

(*See Page No.52*)

Abnormally long beaks obseved in the captive chukar partridges, *Alectoris chukar*.

(See page No. 53)

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Vegetarianism in Chameleon (*Chameleo gracilis*)

In August, 1974 a chameleon in the centre pit at the Madras Snake Park was observed feeding on the ripe red berries of the climbing shrub *Cissus quadrangularis*. More recently an Irula worker at Madras Snake Park observed a wild chameleon feeding on the ripe dark purple berries of *Lantana camara*. Upon capture its mouth was jammed full of them. In a review of the literature we find no references to chameleons feeding on any thing but insects or small vertebrates. It seems strange that such a highly specialized insect eater makes berries a part of its diet. It is worth noting that chameleons do very poorly in captivity, barely 1% surviving longer than a month. It is advised that these animals be prohibited from sale in pet markets and from foreign export.

A. Joseph
Chockalingam
R. Whitaker
Madras Snake Park
Guindy Deer Park
Madras 600022.

Geographical and Altitudinal Distribution of Amphibians and Reptiles in the Himalayas

(PART IV)

By

Robert C. Waltner

183. **Boiga cyanea** Dum. and Bibr.
Darjeeling Dist. (Tindharia), Assam (Cachar, Sonapur, and Monacherra), Bruma (Maymyo, Rangoon Dist., and Tavoy), Thailand (Nakon Lampang, Dong Rek Mts. and islands of the Gulf viz., Koh Pennan, and Koh Pa-Nagan), Cambodia (Bokor), Cochin China, and Pulo Condore. 0-6,000 feet. (21, 22, 23, 24)

*184. **Boiga multifasciata** Blyth
E. Himalayas (Darjeeling Dist. and Nepal) and W. Himalayas (Subathu, Mussoorie, Naini Tal, and Muktesar). Generally above 5,000 feet. 3,000-9,000 feet. (20, 21, 22, 24)

185. **Boiga cyelonensis** Gunther
E. Himalayas, Nepal, and Khasi Hills. Plains to 6,000 feet. (21, 22)

186. **Boiga cynodon** Boie
Sikkim, Darjeeling, plains of India, Khasi Hills, and N. and Lower Burma. Plains to 3,000 feet. (21, 22, 24)

*187. **Boiga forsteni** Dum. and Bibr.
Sikkim, Darjeeling, W. Himalayas, and plains of India. Plains to 3,000 feet. (21, 22)

188. **Psammophis schokari Forskal
Kashmir (Chilas), N.W.F.P. (Waziristan and Tochi Valley), Baluchistan, Rajasthan (Jodhpur), Sind, Punjab (Lahore), and westwards through Iran and Arabia to N. Africa. Plains to 3,000 feet. (20, 21, 22)

189. **Psammophis condanarus Meerem
W. Himalayas between 3,000 and 6,000 feet, Punjab, Sind, Kutch, central India (Poona, Jalna, Kurnal, and Berar), U.P., Bihar and Orissa, Bengal as far east as long. 86°, and Lower Burma. Plains to 6,000 feet. (20, 21)

190. **Psammophis leithi Gunther
Kashmir (Chilas), Baluchistan (Munro Khalat), N.W.F.P. (Thai and Kaur Bridge), Sind, Kutch, W. India, Punjab, former Bombay State, Rajputana, and U.P. (Fyzabad). Plains to 3,000 feet. (20, 21, 22)

191. **Psammodynastes pulverulentus** Boie
The whole of the Indi-Chinese subregion from the E. Himalayas as far west as C. Nepal, to S. China, Hainan, and south to the Malay Archipelago. 0-9,000 feet. (20, 21, 22, 24)

192. **Dryophis prasinus** Boie
From the E. Himalayas (Sikkim and Darjeeling) and Bengal (Jalpaiguri Dist.) throughout the whole of the Indo-Chinese region as far north as the Triangle in Upper Burma and to the Malay Peninsula and the Indo-Australian Archipelago. Pulo Condore off the coast of Cochin China. 0-6,000 feet. (20, 21, 22, 24)

193. **Dryophis fronticinctus** Gunther
Sikkim, Darjeeling, Assam (Sibsagar), and Lower Burma (Watiya, Rangoon, and Pegu Dist.). Plains to 6,000 feet. (20, 21 22, 24)

194. **Rhabdops bicolor** Blyth
E. Himalayas, Khasi Hills, and N. Burma. 3,000-6,000 feet. (21)

195. **Blythia reticulata** Blyth
E. Himalayas, Khasi Hills, and N. Burma. 3,000-6,000 feet.

196. **Xenochrophis cerasogaster** Cantor
C. Nepal, Khasi Hills, and plains of India. Plains to 3,000 feet. (21, 22)

Subfamily Homalopsinae

*197. **Enhydris enhydris** Schneider
E. and W. Himalayas, Khasi Hills, plains of India (U.P., Vizagapatam Dist., Bihar and Orissa, and Bengal), Assam, Burma, Thailand, Indo-China, S. China, and the Malay Peninsula and Archipelago. Plains to 3,000 feet. (20, 21, 22)

Family Elapidae

198. **Bungarus bungaroides** Cantor
E. Himalayas (Sikkim, and Darjeeling Dist.), Assam (Khasi Hills), Cachar, and Upper Burma (Matsatap, Ahke, and N.E. of Fort Hertz). 3,000-9,000 feet. (20, 21, 22, 24)

199. **Bungarus caeruleus Schneider
All of India north to Nepal and to Kashmir, Ceylon, and Mediterranean palearctic. Up to 5,400 feet in Almora. (20, 21, 22)

200. **Bungarus niger** Wall
E. Himalayas (Sikkim and Darjeeling Dist.), Assam (Dibrugarh), and plains of India. Plains to 3,000 feet. (20, 21, 22, 24)

201. **Bungarus lividus** Cantor
Darjeeling Dist., plains of India, Bengal (Rungpore and Jalpaiguri), and Assam (Dibrugarh). Plains to 3,000 feet. (20, 21, 22, 24)

*202. **Callophis macclellandi** Reinhardt
E. (Sikkim, Darjeeling, and Nepal) and W. Himalayas, Assam, Burma north of the Abor country and south to the Pegu Yomas, Tong-King, Annam, S. China, Hainan, and Formosa. Plains to over 12,000 feet. (20, 21, 22, 24)

*203. **Naja naja** Linnaeus
E. and W. Himalayas, N. and Lower Burma, Peninsular India, Ceylon, Indo-China, S. China and adjacent areas, W. Tibet, and Mediterranean palearctic. Plains to 12,000 feet. (20, 21, 22, 24)

*204. **Naja hannah** Cantor
E. and W. Himalayas, Khasi Hills, Peninsular India, the whole of the Indo-Chinese subregion as far north as the Triangle in Upper Burma, S. China, the Andaman Is., the Malay Peninsula and Archipelago, and the Philippine Is. Plains to 6,000 feet. (I obtained a specimen at 7,200 feet at Mussoorie in 1967.) (20, 21, 22, 24)

Family Viperidae

Subfamily Viperinae

*205. **Vipera russelli** Shaw
The whole of India from the Himalayas (Sikkim, and Darjeeling) to Ceylon, extending to the Sind and Baluchistan in the west and Kashmir in the north, to Burma, Thailand, Formosa, and Kwangtung Prov. in China. Plains to 9000 feet. (20, 21, 22)

206. **Vipera lebetina Linnaeus
Kashmir, Waziristan and Baluchistan, to eastern Europe, and into N. Africa. Elevation (?). (20)

207. **Echis carinatus Schneider
Kashmir, the whole of India south of the Ganges except Bengal, Mullaittivu in Ceylon, and across S.W. Asia into Africa north of the Equator. Plains to 3,000 feet. (20, 21)

Subfamily Crotalinae

*208. **Agkistrodon himalayanus** Gunther
E. and W. Himalayas (Sikkim to Chitral and Kashmir). 3,000-16,000 feet. (1, 10, 20, 21, 22)

209. **Trimeresurus monticola** Gunther
E. Himalayas (Sikkim and Darjeeling) as far west as Nepal, Khasi Hills, the whole of the Indo-Chinese subregion, the Malay Peninsula, Yunnan, S.E. Tibet, S. China, Formosa, and Szechuan-Sikang. 0-9,000 feet. (10, 19, 20, 21, 22, 24)

210. **Trimeresurus popeorum** Smith
The E. Himalayas (Sikkim and Darjeeling), Khasi Hills, Assam, Burma, Thailand, the Malay Peninsula, Borneo, and Sumatra. 0-3,000 feet. (20, 21, 22)

211. **Trimeresurus erythrurus** Cantor
Bengal and the Himalayas east of long. 88° (Sikkim and Darjeeling), Khasi Hills, Assam, and Burma west of long. 98° and south to Moulmein. Plains to 6,000 feet. (20, 21, 22)

*212. **Trimeresurus albolabris** Gray
Sikkim, Darjeeling, Kathmandu, Simla, Kulu, and Nagpur (M.P.), the whole of the Indo-Chinese subregion from the E. Himalayas to S. China, Formosa and Hong Kong in the north, Hainan, Thailand and Burma north of lat. 13°, the Andaman and Nicobar Is., absent from Thailand south of lat. 13° and the Malay Peninsula, but occurring again in Sumatra, Java, and Indonesia as far south as Timor. 3,000-6,000 feet. (10, 20, 21, 22, 24)

213. **Trimeresurus stejnegeri** Schmidt
Sikkim, Darjeeling, Nepal, Khasi Hills, N. Burma, Yunnan, and S. China. 3,000-9,000 feet. (21, 22)

Concluded

Acknowledgements

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Rinderpest Kills Bisons in Periyar Wildlife Sanctuary

Mass deaths of Bisons had been reported from Periyar Wildlife Sanctuary a few months back. Tourists saw the lakeside funeral pyres of dear Bisons.

A team of doctors sent by the Indian Veterinary Research Institute screened the sanctuary and examined the carcass of a dead bison and came to the conclusion that Rinderpest had afflicted and killed the Bisons. The killer disease was carried to Bisons by domestic cattle. A vigorous anti-rinderpest vaccination programme for domestic cattle in the area is recommended along with the creation of an immune belt round the sanctuary by stopping completely all grazing by domestic cattle in and around the sanctuary area.

Export of India's Wild Life and its Biological Significance

By
R.K. BHANOTAR, R.K. BHATNAGAR, AND D.K. THAKUR

(Continued from Vol. 16, No. 3)

(a) Lizard skins (untanned)

These were exported to Australia, Belgium, Bulgaria, Columbia, Denmark, Formosa, France, German FRP, Hongkong, Italy, Iran, Japan, Lebanon, Singapore, Sweden, Switzerland, Spain, U.K. and U.S.S.R.

The figures for 1964-73 are as follows:

Year	Quantity exported (in Kg.)	Value (in Rupees)
1964–65	463334	6015007.00
1965–66	314052	4681572.00
1966–67	285121	6417221.00
1967–68	209666	4361314.00
1968–69	589541	2379208.00
1969–70	861064	3410908.00
1970–71	153845	579808.00
1971–72	419801	1210426.00
1972–73	488147	1981504.00
Total:	3784571	31036968.00

(b) Lizard skins (tanned)

These were exported to Austria, Australia, Bulgaria, Belgium, Denmark, France, German DRP and FRP, Hongkong, Italy, Japan, Kuwait, Malaya Fedr., Paraguay, Roumania, Spain, Singapore, Switzerland, Sudan, U.K., U.S.A. and Yugoslavia.

The figures for 1964–73 are as follows:

Year	Quantity exported (in Kg.)	Value (in Rupees)
1964–65	42737	1397811.00
1965–66	40547	1446830.00
1966–67	29015	1596272.00
1967–68	67220	2148989.00
1968–69	774635	2475616.00
1969–70	503507	1973548.00
1970–71	276906	818158.00
1971–72	355272	1147105.00
1972–73	428225	1725796.00
Total:	2518064	14730125.00

(iii) Snake and Python Skins

(a) Untanned

These were exported to Canada, Denmark, France, German FRP, Italy, Japan, Netherland, Spain, Sweden, Switzerland, U.K. and U.S.A. and Yugoslavia.

The figures for 1964–73 are as follows:

Year	Quantity exported (in Kg.)	Value (in Rupees)
1964–65	834	65108.00
1965–66	4514	392123.00
1966–67	4008	625504.00
1967–68	1395	308585.00
1968–69	81959	577493.00
1969–70	55920	252830.00
1970–71	60350	250117.00
1971–72	11950	21885.00
1972–73	87535	173749.00
Total:	308465	2667394.00

(b) Tanned

These were exported to Australia, Belgium, Bulgaria, Czechoslovakia, Denmark, France, German GRP, Hungary, Italy, Japan, Malaya, Netherland, Paraguay, Spain, Singopore, Switzerland, Sweden, U.K , U.S.A., Venezuella and Yugoslavia.

The figures for 1964–73 are as follows:

Year	Quantity Exported (in Kg.)	Value (in Rupees)
1964–65	120667	8015537.00
1965–66	91441	7797629.00
1966–67	119464	17348513.00
1967–68	146485	33770702.00
1968–69	2925802	24102147.00
1969–70	1850908	1850908.00
1970–71	21000	21000.00
1971–72	742451	2430113.00
1972–73	1158255	4120849.00
Total:	7176473	99457398.00

(iv) Other Reptile Skin

(a) Untanned

These were exported to Denmark, France, German FRP, Hongkong, Italy, Netherland, Spain, U.S.A. and U.K.

The figures for 1964–73 are as follows:

Year	Quantity exported (in Kg.)	Value (in Rupees)
1964–65	1916	172083.00
1965–66	616	38141.00
1966–67	2287	277619.00
1967–68	123	31757.00
1968–69	11073 Nos.	138562.00
1969–70	1000 ,,	5400.00
1970–71	...	...
1971–72	34200 ,,	31607.00
1972–73	400 ,,	688.00
Total:	4942 Kg./ & 46673 Nos.	695857.00

(b) Tanned

These were exported to Denmark, France, German FRP, Italy, Sweden, U.K. and U.S.A.

The figures for 1964–73 are as follows:

Year	Quantity exported	Value (in Rupees)
1964–65	3333 Kg.	140434.00
1965–66	70 ,,	7729.00
1966–67	3790 ,,	114088.00
1967–68	149 ,,	19772.00
1968–69	42501 (Nos.)	326625.00
1969–70	51266 ,,	78581.00
1970–71	...	...
1971–72	56200 ,,	112179.00
1972–73	34000 ,,	23831.00
Total:	7342 Kg. & 183967 Nos.	823239.00

(V) Water Monitor Lizard Skin

(a) Tanned

The skins were exported to France, Germany FRP, Italy, Japan, Spain, Switzerland and U.K.

The figures for 1968–73 are as follows:

Year	Quantity exported	Value (in Rupees)
1968–69	77015 Nos.	292691.00
1969–70	51256 ,,	78581.00
1970–71	...	...
1971–72	56200 ,,	112179.00
1972–73	34000 ,,	23831.00
Total:	218481 Nos.	507282.00

(b) Untanned Skins

These were exported to Australia, France, German FRP, Italy and U.K. The figures for 1968–73 are as follows:

Year	Quantity exported	Value (in Rupees)
1968–69	84700 Nos.	278726.00
1969–70	1000 ,,	5400.00
1970–71	...	...
1971–72	34200 ,,	31607.00
1972–73	400 ,,	688.00
Total:	120300 Nos.	316421.00

(vi) Common Monitor Lizard Skin

(a) Tanned

These were exported to Austria, German FRP, Hongkong, Italy, Japan, Switzerland, Spain, U.K., U.S.A. and Venezuella.

The figures for 1968–73 are as follows:

Year	Quantity Exported	Value (in Rupees)
1968–69	97500 Nos.	276713.00
1969–70	96700 ,,	387415.00
1970–71	145011 ,,	602256.00
1971–72	124500 Nos.	555537.00
1972–73	93300 ,,	430246.00
Total:	557011 Nos.	2252167.00

(b) Untanned

These were exported to Japan and Italy.

The figures for 1968–73 are as follows:

Year	Quantity Exported	Value (in Rupees)
1968–69	328048 Nos.	1641964.00
1969–70	309032 ,,	1311373.00
1970–71	42000 ,,	183148.00
1971–72	54000 ,,	191947.00
1972–73	42000 ,,	208606.00
Total:	775080 Nos.	3537038.00

V—Miscellaneous Items

Under this category fall Wild animals exported, alive or stuffed, either to Zoos or to bonafide scientific Institutes for study purposes which in broad includes Zoological Collections and insects. Stuffed animals and birds are being taken out as souvenirs and are as follows:

(i) Stuffed animals and birds

These were exported to Bahamas, Belgium, Canada, Denmark, Dubai, France, German FRP, Honduras, Iceland, Iran, Japan, Kuwait, Lebanon, Malawi, Netherland, Norway, Panama (Rep.), Saudi Arabia, Singapore, Sweden, Tanzania, Thailand, Trinidad, U.K., U.S.A., Uganda, Virginia Is., Zambia.

The figures for 1965–73 are as follows:

Year	Quantity Exported	Value (in Rupees)
1965–66	?	13534.00
1966–67	?	55465.00
1967–68	?	150763.00
1968–69	?	130091.00
1969–70	(nos. ?)	185087.00
1970–71	22769 Nos.	374827.00
1971–72	22993 ,,	192845.00
1972–73	56034 ,,	489018.00
Total:	?+101796	1591630.00

Monkeys

These were exported to Afghanistan, Austria, Belgium, Canada, Ceylon, Czechoslovakia, Denmark, German DRP & FRP, Hungary, Iran, Italy, Israel, Japan, Malaya, Netherland, Rumania, Singapore, Spain, Switzerland, Thailand, U.S.S.R., U.K., U.S.A., and Venezuella.

The figures from 1664–73 are as follows:

Year	Quantity exported (in numbers)	Value (in Rupees)
1964–65	45166	2240619.00
1965–66	36880	1762865.00
1966–67	44158	3350997.00
1967–68	44162	3549907.00
1968–69	46897	3404807.00

(ii) Zoological Collections

These were exported to Afghanistan, Argentina, Australia, Austria, Botswana, Belgium, Canada, Ceylon, Denmark, France, German FRP, Hongkong, Iran, Iraq, Israel, Italy, Japan, Nepal, Netherlands, Newzealand, Norway, Singapore, Switzerland, Tanzania, U.K., U.S-A., Windward Is., Malaysia and Sweden.

The figure for 1965–73 are as follows:

Year	Quantity Exported	Value (in Rupees)
1965-66	?	1344584.00
1966-67	?	2091175.00
1967-68	?	2587642.00
1968-69	?	3140959.00
1969-70	?	3788736.00
1970-71	?	4145041.00
1971-72	?	1620329.00
1972-73	?	4603766 00
Total:	?	23322232.00

(iii) Other Live Animals (including insects)

These were exported to Afghanistan, Austria, Belgium, Bolivia, Bulgaria, Bangla Desh, Ceylon, Cyprus, Czechoslovak, Dubai, Fiji, France, German DRP and FRP, Greece, Israel, Italy, Japan, Madagascar, Nepal, Netherlands, Qatar, Singapore, Spain, Thailand, U.K., U.S.A., U.S.S.R. and Yugoslavia.

The figures for 1965–73 are as follows:

Year	Quantity exported	Value (in Rupees)
1965–66	?	141671.00
1966–67	?	66603.00
1967–68	?	279137.00
1968–69	?	91501.00
1969–70	1461	319389.00
1970–71	?	9086946.00
1971–72	?	339156.00
1972–73	?	763306.00
Total:	?+1461	11087709.00

VI—General Items of Wildlife and fisheries

(i) Whale Bone & Waste

These were exported to Belgium, Bulgaria, Ethiopia, France, German FRP, Hongkong, Italy, Japan, Malaysia, Nepal, Netherlands, Spain, Singapore, Saudi Arabia, U.K., U.S.A. and Yugoslavia.

The figures for 1965–73 are as follows:

Year	Quantity exported (in Kg.)	Value (in Rupees)
1965–66	3750538	4670379.00
1969–70	883374	1439901.00
1970–71	688411	1444777.00
1971–72	770867	1715073.00
1972–73	84406	2217120.00
Total:	6177596	11487250.00

(ii) Tortoise Shell

These were exported to German FRP, Hongkong, Italy, Japan, Netherland, Spain, Singapore, U.K. and U.S.A.

The figures for 1964–73 aee as follows:

Year	Quantity exported	Value (in Rupees)
1964–65	2222 Kg.	35566.00
1969–70	18951 ,,	85443.00
1970–71	2270 ,,	69944.00
1971–72	1009 ,,	19878.00
1972–73	843 ,,	48034.00
Total:	25295	258865.00

(iii) Shark Skin Leather

The figure available for 1965–67 is as followt:

Year	Quantity Exported	Value (in Rupees)
1965–67	268	18528.00

(iv) Shark Skin Edible

These were exported to Fiji Is., Hongkong, Singapore and U.K.

The figures for 1965–73 are as follows:

Year	Quantity Exported	Value (in Rupees)
1965–67	193756 Kg.	945334.00
1969–70	163021 ,,	2652012.00
1970–71	166753 ,,	3476865.00
1971–72	142732 ,,	2485622.00
1972–73	147559 ,,	2809220.00
Total:	813821	12369053.00

(v) Cowries

These were exported to Malayaia, Netherlands, Saudi Arabia, Thailand, U.K. and U.S.A.

The figures for 1964–73 are as follows:

Year	Quantity Exported	Value (in Rupees)
1964–67	6390 Kg.	12016.00
1969–70	2300 ,,	8518.00
1970–71	805 ,,	2414.00
1971–72	1870 ,,	9270.00
1972–73	895 ,,	6463.00
Total:	12260	38681.00

(ix) Turtles Live

These were exported to German FRP, Italy, Japan, Netherlands, Switzerland and U.S.A.

The figures for 1965–73 are as follows:

Year	Quantity exported (in numbers)	Value (in Rupees)
1965–68	135	847.00
1969–70	143	910.00
1970–71	1644	26177.00
1971–72	442	3528.00
1972–73	760	6954.00
Total:	15124	38416.00

The above figures show clearly that wildlife is over exploited resulting in the upsetting of ecological balance. The export of snake skins should be curtailed and their killing made unprofitable as they are the real heroes of the "Green Revolution", eating up field rats who multiply excessively eating up much of the grain produced by agriculturists resulting in imports of foodgrains. Birds have their own important role in agriculture.

The country should not run after foreign exchange at the cost of disastrous results on agriculture and environment apart from the devastating depletion of our national wildlife heritage.

(Concluded.)

Jim Corbett Birth Centenary celebrated

The Wildlife reservation Society of India celebrated at the Doon Club the birthday centenary of Jim Corbett, the great social worker, Shikari and conservationist, who had endeared himself to the people of Garhwal and Kumaun by shooting the man eating panther of Rudraprayag and shot to international fame after killing many a man eating tiger in Kumaun and writing the world famous book 'Man Eaters of Kumaun.'

Shri Mukandi Lal a contemporary of Jim Corbett was the speaker of the evening and related many enecdotes and paid homage to his memory and pleaded with the audience to spare the trees and wildlife a fast vanishing heritage.

Two short films on the wildlife of India and conservation of forests were screened. To the joy of the audience a tape record on Jim Corbett by the famous commentator Melville de Mello was played with the roar of tigers, the trumpet of elephants and the call of cheetal and sambhar recreating the jungle scene.

The guests were welcomed by Shri T.S. Negi, Executive Vice President and thanked by the Honorary Secretary Dr. R.N. Misra.

The Society has also been running an essay competition for students on conservation and wildlife for the last sixteen years in memory of Jim Corbett.

(Dr. R.N. Misra)
Dt. 25th July, 1975. Honorary Secretary.

The Trout in India

By

Dr. Raj Tilak,

Introduction

The group of fishes, of which the trout is a member, is a native mostly of the Temperate and Arctic zones. These fishes have attracted the attention of Fishery Biologists and Anglers because of their commercial value, beauty and gamesomeness. They inhabit both the sea and the fresh water and while passing from the fresh water to the sea, they change their colour and form to a great degree. Their eggs are large, non-sticky and capable of being easily squeezed out of the belly for artificial fertilisation. This fact has been exploited by Fishery Biologists for their propagation under controlled conditions. The fertilised ova are able to survive for many days in ice and hence capable of easy transportation to long distances where some of these fishes, particularly the species of the genus *Salmo*, have been introduced. There is a marked sexual dimorphism (difference in the external morphological characters of the two sexes) in many salmonids. These fishes are grouped under the technical name SALMONIFORMES.

The trout in India belongs to the genus *Salmo* which falls under the family SALMONIDAE. The fishes of this family have a streamlined body which is covered with scales. An adipose dorsal fin is present in addition to the rayed dorsal fin. The swim-bladder is usually large. The maxillaries and the premaxillaries form the upper jaw. The supraoccipital is in contact with the frontals. The post-temporal is forked and attached to the epiotic and the opisthotic. The opercular bones are well developed. The ribs are sessile and the parapophyses may be short or absent. The epineurals and epipleurals are sometimes present. The ova fall into the coelomic cavity before extrusion and the oviduct is usually absent.

These fishes are usually found in the seas and the fresh waters of temperate and Arctic zones of Northern Hemisphere but for the last nearly a century they have been introduced into many other parts of the world.

Introduction of Trout in India

In India trout is an introduced game fish and only three species have so far been successfully introduced into Indian waters and they are *Salmo trutta fario* Linnaeus (Brown trout), *Salmo gairdnerii gairdnerii* Richardson (Rainbow trout) and *Salmo leyensis* Walker (Loch Leven trout).

The first introduction of trout (Brown trout) in India was made by Thomas (1863) in the Nilgiris (Tamil Nadu) but this attempt failed because all the eggs died during transit. Day (1866) imported 6000 eggs of the same species to Ootacomand and only a few ova of the lot survived and the hatched fry were the first to see life in the Indian waters. Later in 1867 similar attempts were made but only it was Mr. Wilson, who could discover, merely

because of his intuition, that the climate and other conditions of the place were not suitable for the Brown trout and he introduced, on a trial basis, the Rainbow trout from Germany and New Zealand into a hatchery built on snow mountain in the Nilgiris; this lot established there well. Trials with *Salmo levensis* (Loch Leven or spotted trout) and *Salmo fontinalis* were also made but with partial success.

According to Mitchell (1918) the introduction of trout into Kashmir was made in 1900. A lot of eggs was sent as a present from the Duke of Bedford to the Maharaja of Kashmir in exchange of Kashmir stags. The eggs were sent on a steamer. All the eggs perished on the way due to heat. Again in the late 1900 another consignment of ova was sent. They were brought in a specially designed box from Bombay in December. Nearly 6000 ova arrived in good condition and were handled under the personal care of Mr. Mitchell. Even then many of them did not hatch while others died out at fry stage. The ones which survived were released at 12 cm. stage into Arrah river near Dachigam.

The fertalised ova were again imported in 1902. The hatching of these was unsatisfactory and those released in the ponds were lost in the floods. Untill then trials were made with Brown trout. In 1904 the ova of Rainbow trout, which is much more delicate than *S. trutta fario*, were brought but none of them hatched out. So no attempt was made to introduce this species into Kashmir till 1912 when out of 1000 fertalised ova received very few survived. The survived ova established at Harwan very well and the species bred because the Harwan water is suitable for this species whereas it is rather warm for the Brown trout.

The first consignment of ova of Brown trout, which has established itself well in Kashmir waters and started breeding, was collected in 1905. There were nearly 2000 ova of which only 900 hatched out. They were unfortunately eaten up by a Himalayan Water-Shrew except one. In 1908, a proper hatchery was built at Harwan and fertalised ova were distributed all over to Kashmir. The ova were hatched in Pahari boxes. The ova were also sent to Abbotabad, Kangra, Kulu, Simla, Nainital and Shillong under the care of men trained at Harwan.

In 1908, an attempt was made to introduce the great Danube Salmon (*Salmo hucho*) into Kashmir. Some of the ova of this species hatched out but did not grow bigger than half a pound size. The identification of this species was unfortunately wrong because the continental pisciculturist, who supplied the ova, admitted that the ova could be of *Salmo salar*. Many of them were released and cross bred with *S. trutta fario* but with little good results. They however remained in Kashmir but nothing is known about them afterwards The Brown trout has been introduced into the tributary streams of Chenab river in Jammu at Bhadarwah. Till recently, care and maintenance of trout culture in Kashmir has been undertaken by the Department of Fisheries and Fish Preservation, Srinagar (J & K) under the sustained and able guidance of Sh G M Malik who retired as Director

of the department nearly two years ago. His expert advice benefitted trout fishery in other parts of India too.

River Chenab has not so far been considered for large scale introduction of the trout in its waters though this river is quite suitable for this purpose because of the low temperature of the water. The higher reaches of this river in the Lahaul & Spiti valley (Himachal Pradesh), which the present author personally visited and studied the general conditions of the river, present fairly good conditions for successful introduction of trout into Chandra and Bhaga, the two main tributaries of Chandra-Bhaga river (a name of river Chenab in that area). A note regarding this is being published separately.

The dispersal of Brown trout seed towards the eastern side of the Himalaya started in 1909 when it was introduced into the Beas in Kulu valley by Mr. G.C.L. Howell, I.C.S., F.Z.S., Assistant Commissioner of Kulu and later first Director of Fisheries in Punjab.

According to Dhu (1918) the Brown trout was introduced into Chamba in 1913 by His Highness the Raja of Chamba. The fertelised ova were brought from Srinagar (J & K) and kept and reared in Pahari bases in Buhar nullah and Baleni nullah. Mr. Ross introduced Brown trout ova into Kangra at Baner khad, Awa khad and Binnu khad in 1911 but heavy silting, due to land slides, caused many of the ova to perish. However, this species has established itself well in Himachal Pradesh and recently some efforts are being made to introduce this species into some more water systems in that state. As the waters of Kangra district were too hot for Brown trout, a trial was made with the Rainbow trout in 1913 but it could not survive the disease menace because it is much less resistant to diseases than the Brown trout. In 1910, the trout travelled to Kumaon hills and established there encouragingly (Smythies, 1910; Dhu, 1918). The trout hatchery was situated near Bhowali in district Nainital. Majority of the ova received there in 1910 perished during floods. Subsequently further introduction of Brown trout partly from Srinagar and partly from the hatcheries in Nainital and Tehri-Garhwal districts was made into Nainital lake, Sath Tal lake, Naukatchia lake, upper reaches of Bhagirathi river and smaller streams. The water of majority of lakes of Kumaon is warm for this species of trout and therefore, this species has only been able to breed in colder and higher reaches of rivers and streams. The snow-fed rivers such as the higher reaches of Bhagirathi river, eastern Ramganga in Almorah district, Gohna lake in Garhwal provide good breeding condtiions for this trout.

In Darjeeling Himalaya the trout was introduced but did not survive well, probably due to the heavily silted condition of the rivers during floods and the precipitous nature of the terrain with high water falls. Trout has established well at 2700-3000 metres height in Ha valley in Bhutan, although no further reports of its progress are available. Introduction of trout has also been made into Sikkim where it has thriven well. Recently efforts are being made to introduce trout into Assam, Arunachal Pradesh and Nagaland.

Biotic Conditions Required by the Trout

After any species of fish is introduced into the waters of an area, it requires to acclimatise itself to the environmental conditions of that area If it does, it survives, otherwise it perishes. Thus, as a prerequisite to introduction of a fish, a thorough knowledge of the minimum required biotic factors for the survival of the fish in the area is necessary to be known. As far as trout is concerned, the most important of the conditions for its healthy living are:

(a) There should be clear running water.

(b) Low temperature, ranging between 10°—15° C is good but very low temperature kills the fish by freezing, if the amount of water is not sufficient. At high temperature they do not grow and breed.

(c) There should be equable climatic conditions.

(d) There should be abundant aquatic vegetation for the survival of Entomostraca and other Crustacea in general, which act as their food.

(e) Water falls should be avoided and silting should be minimum.

As far as possible the stock for the purpose of introduction should be brought from a place where the trout in India has already been perfectly acclimatised to the conditions which are the near equavalent of the place where introduction is desired to be made. This minimises the chances of failure to acclimatise to the biotic conditions of a new place.

The Brown trout (*Salmo trutta fario* Linn) thrives well at high altitudes and with low temperature. This species could not survive at Ootacamond and Travancore because of the high temperature of the area. Only Rainbow trout could be planted there with success. The conditions in the waters of Arunachal Pradesh are not the same as in Kashmir and therefore, the Brown trout is not as much a success as it is in the later place.

The Enemies of Trout

Before introducing trout, it should be ascertained that the enemies of trout do not exist in the area. If they do exist, efforts should be made to eradicate them or put a complete check on their activities. The enemies of trout are:

(a) The crabs which harm the fry and fingerlings of trout.

(b) The horned owl is very destructive to the fingerlings and even bigger sizes during night when the fishes come near the surface of the water.

(c) The water snakes eat them and destroy both the young and the adult trout.

(d) The larvae of Odonata, which metamorphose in the water hunt for the fry of trout.

(e) The aquatic Hemiptera of different species are particularly destructive to the fertilised ova and the fry of trou.

Apart from the above, the most dangerous and the greatest enemy of trout is human being himself, particularly if he poaches and does not allow the fishes to grow to the fishing size.

The Food of Trout

It should also be made sure that natural food exists in the area in the form of the following:

(a) The terrestrial insects and their larvae such as the Caddis flies (Trichoptera) particularly *Limnophilus lunatus*, *Phrygonea grandis* etc , the water beetles (Coleoptera) such as *Colymbes striatus*, *Dysticus marginalis*, *Acilius sulcatus*, *Hydrophyllus piseeus* etc , the May–flies (Ephemeroptera), true flies (Diptera), bees and wasps (Hymenoptera), butterflies and months (Lepidoptera), grasshoppers (Orthoptera), stone flies (Plecoptera) etc

(b) The spiders (Arachnida) and Scolopendra (Myriapoda)

(c) The snails and slugs (Mollusca) such as *Limnea pereger*, *Planorbis corneus*, *Neritina perotetiana* etc

(d) The crustaceans and oligochaet worms

(e) The frogs and tadpoles (Amphibia), and fishes of small size such as *Danio* and *Noemacheilus* etc.

The quantity of molluscs and crustaceans eaten by the trout is rather negligible and the earthworms usually recovered from the stomach of these fishes are in majority of cases used as bait. During rain the supply of food in water gets disturbed and hence rainy season is the period of poor food. Sometimes during rainy season, there are heavy floods and the food becomes scarce and pressed under the circumstance the trout turns to even canibalism although cases of this nature are rare.

In the hatcheries, nurseries and rearing and breeding tanks and channels, the chopped off pieces of flesh of the mirror carp (*Cyprinus carpio specularis* Linn.), which is reared in separate tanks, is given as artificial food. It has been observed that a stock of artificial food, if regularly supplied, works better than the natural food at the experimental stations because it obviates the chances of lack of food due to disturbance during floods.

Hatching and Rearing of Trout

Proper care should be taken that the fish is not made to feel of its changed habitat when introduced into a new place. A hatchery for hatching the ova, should be built at high altitude stations. The ova can be successfully hatched by using Pahari box or River box methods The cement and brick work of the hatchery should be kept to the minimum and more of hilly vegetation and plants should grow on the muddy and stony banks of the tanks so that the fish is kept unaware of the artificial conditions However, the question of breeding which requires plenty of care and skill arises only after the fishes get fully acclimatized to the given conditions

Diseases of the Trout

Gaschott (1931) gives an account of various diseases of the trout with their diagnosis and treatment Davies (1936) dealt with the internal and external parasites of trout and gave account of other diseases such as fungus pop-eye, thyroid tumour, intestinal inflamation, white spot disease, blue sac and soft egg disease Gaylord and Marsh (1914) described the carcinoma of thyroid gland while Moore (1923, 1924) enumerated the diseases in New York hatchery of trout Khan (1939) studied the diseases of trout in Indian waters and suggested remedies The diseases studied and treated by him are Fin rot or caudal rot, Carcinoma or Thyroid tumour (goitre), intestinal inflamation and attack of fungus or *Saprolegnia* Majority of these diseases occur in tanks and lakes where silt is brought by floods whereas the fishes of the clear running streams are comparatively healthy.

Fishing for the Trout

A large number of very good accounts on trout fishing are available in literature and some of them are mentioned at the end here. As far as trout fishing is concerned Kashmir is certainly the anglers' dream. The wide valley, 144.8 Kms long and 48 Kms wide, is enclosed by high hills which feed numerous snow water streams abounding in Brown and the Rainbow trout. The trout has been thriving excellently well in these waters for the last nearly seven dacades. A fly fisherman is assured of the best fishing available there. The Fisheries and the Fish Preservation Department of the state has been doing much to conserve and enhance the wealth of trout in the state and allows fishing of trout waters only to licence holders. Since the times of the late His Highness the Maharaja of Kashmir, the Jammu and Kashmir State Fisheries Regulations have been in vogue (Dhu, 1918), dividing the water systems of the state into the following:

(a) Trout waters include all such water–ways which hold the introduced trout in which no fishing is permitted except on special licence issued by the department of Fisheries of the state.

(b) Reserved waters are those waters where fishing is ordinarily prohibited except under special circumstances and under a special licence issued for the purpose. The fee for the licence to fish Reserved waters is also somewhat more than that of ordinary trout waters.

(c) Sanctuaries include waters where fishing is strictly prohibited because of the scared nature of the place and no fishing is allowed under any circumstances.

According to the local changing conditions, slight modifications in the above appear to have been made by the concerned authorities.

The Beas, in the Kulu valley of Himachal Pradesh, together with a large number of small streams, where trout has been introduced also offer good trout fishing. The Beas is a big body of water and the heavy flow calls upon the sportsman to work harder for his fish than in Kashmir where the rivers and nullahs are not as forceful.

In addition to the above famous trout fishing areas, Kumaon hills with its magnificent lakes in Uttar Pradesh and the Nilgiris streams in Tamil Nadu also offer exhilarating experiences with trout fishing.

The trout rises to the fly and offers excellent sport. The anglers use both wet and dry flies. In order to decide which particular fly one has to put on ones line, a study of the local natural flies is necessary because the fishes are used to being attracted towards them. It has been observed that trout has sometimes come on worm intended to have been put to fish for other local fishes but such instances are rather rare.

The trout provides an excellent food and it is considered a delicacy particularly by the foreigners. Usually the trout in India does not exceed a size of 4.5 kgs. However, Dhu (1918) has mentioned a record size of trout landed in Bringhy river in Kashmir by Mr. Percy Brown. The fish weighed 6.4 kgs. with a length of 78.74 cms. and the girth 48.26 cms. The fish was caught on an artificial minnow.

In addition to the information given above, the readers may refer to the following works for additional and exhaustive information on the subject. The author feels grateful to Director, Zoological Survey of India, Calcutta for encouragement.

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ELEPHANT CAPTURING OPERATIONS IN KERALA

Elephant capturing operations are held in different parts of Kerala forests. Kodanad, 12 kms north east of Perumbavoor on the left bank of Periyar in Ernakulam District, is one of the accessible camps where they are trained after capture. The capturing season is usually from December to May followed by 2 to 3 months of training.

Pits are dug along the elephant walks is the interior of the forests and covered with a thin layer of grass and leaves. Pitwatchers staying on 'Machans' (treetop huts) watch the pits so that rescue operations could start soon after the elephant's fall into them. The experienced elephants help the captive to come out of the pit. It is then led to the elephant camp at Kodanad for training.

Tourists planning to witness this unique event can stay at Alwaye Palace, a tourist bungalow.

Tourism News Letter May 1975.

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Corvus splendens, The House Crow breeding at Goa in winter

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On December 15th 1973, while waiting for the repairs to be carried out to the official jeep at Panjim, Goa. I happened to observe a House Crow pick up a dry twig from a large dustbin nearby and fly away. After a couple of minutes it again appeared on the scene, picked up another twig and took off. Winter not being the normal breeding season for crows in this part of India, I became curious and followed the bird to a medium sized tree about 30 yards away behind the building. I was pleasantly surprised to see a nest under construction. The other partner, presumably the female, was busy incorporating the twigs. I watched the activity for about an hour, during which time as many as 9 sticks were brought in and incorporated in the nest structure.

I had to return to Molem, where I was camping, the same day and did not get the opportunity to visit this nest till 19th, when I was passing by Panjim on my way back to Poona. The birds were still at work on 19th. They were then bringing in the lining materials. I tried to locate more active nests in the vicinity and elsewhere in Panjim. Although a population of several hundred House crows was in evidence I could find only two other nests. Of course my search was a hurried one and there is every likelyhood of my having missed some others. As I returned to Poona the same day I shall never know whether any eggs were laid in that nest and hatched.

Both Hume (1889 : 9) and Baker (1922 : 33; 1932 : 16) have recorded this species breeding in winter at Dacca and Mymensingh and also in Ratnagiri. The breeding record at Ratnagiri is based, evidently, on the observations of Mr. G.W. Vidal, one of Hume's correspondents. Vidal (in Hume 1889 : 9) writes "The common crow appears to have two broods in the year in our district (Ratnagiri), the first in April, May and the second in November, December. In these four months I have found nests, eggs, and young birds in several different places in the district, and as yet no other times. It is extremely improbable that there should be one breeding season lasting from April to December, and I think I may state with certainly that the Crows *do not* breed at Ratnagiri during the months of heaviest rainfall, viz. July, August and September.....". Baker (1932 : 16) comments thus on this phenomenon of two breeding seasons "In the two seasons I believe there are two sets of birds breeding and not the same lot of birds breeding twice and rearing two broods, for nests which are used annually are never used twice in the same year". Recently Salimali (1972 : 245) has ventured to explain this winter breeding. He

says "some birds (probably of the previous year, C. 15 or 16 months old) breed in October-December".

I have been working on the nidification/breeding biology of common avian species including the House Crow for the past 20 years or so. I had not come across any active nests of this species in winter anywhere else. There must be, therefore, something very exclusive or special to this area which prompts the House Crows to breed for a second time.

The breeding season in avian species is initiated, according to current belief, by a complex of factors like:

a. Natural instinct.

d. Physiological changes, brought about by the changing conditions of the habitat and the various ensueing ecological stimuli such as quantum of Sunshine, temperature, precipitation and availability of food etc.

It has been the experience of various workers all over the world that these factors effect different species differently in the same or different areas of the globe. Rowen and Bissonnettee (in Linsdale, 1933) attached paramount importance to light (more Sunshine). clatming it to be the biggest single factor responsible for breeding activity in birds. Linsdale (1933) commenting on their theory writes "If the time of the beginning of the breeding cycle were entirely or even largely determined by the length of day, we might expect birds in the same latitude to have closely similar calander for breeding activities". In the same paper he shows that in two such regions in Western United States viz., California and Kansas, the height of the breeding season is attained in April, May in California and in June in Kansas, the differences in season depending upon temperature and precipitation. Winterbottom (1935) had found in three districts of North Rhodesia in the same latitude birds breed at different times, temperature, humidity and altitude being the determining factors. Skutch (1950) has observed the Humming birds in Western highlands of Guatemala commence nesting when the days start becoming shorter.

Pitt (1929) illustrated the stimulating influence of warm weather and restricting influence of cold on the breening activities of some avian species in Norway. Pickwell (1931) established a correlation between the temperature and the start of nesting in the case of *Otocoris alpestis praticola*. Nice (1937) observed that the song sparrow started laying 5 days after the maximum day temperature averaged 22.9°C for 3 successive days at Interpont (Ohio U.S.A.). But in Central America and India a number of species have been observed when the temperatures are falling (Vantyne & Berger, 159 : 314; Lamba, 1963 : 111).

In the desert areas of Africa and Australia, Moreau (1950) and Keast and Marshall (1954) often found the rainfall as the stimulus for reproduction, whereas in Western Guatemala Skutch (1950) found a great majority of birds nesting at the height of the dry season.

Moreau (1936) has found a "single breeding season of surprisingly short duration" in the birds of evergreen forests in the East Africa. He discusses as possible stimuli, light, temperature, precipitation and food supply, deciding against any "single factor Hypothesis".

In order to have a better idea of some of these factors involved at Ratnagiri and Goa I requested Mr. C.R.V. Raman, Dy. Director General of Observatories at Poona for climatological data for Ratnagiri and Marmugoa from 1968-1970; which he was kind enough to supply. This data comprises of Mean Maximum and Mean Minimum temperature, mean monthly rainfall, mean monthly humidity and mean monthly length of the day and is tabulated for Ratnagiri (Table I) and Marmugoa (Tnble II) seperately. For the sake of comparison similar data for Poona is also given (Table III).

A study of this data reveals both at Ratnagiri and Goa the general climatic conditions of temperature, rainfall, humidity and length of the day during April-May, the main breeding season before the onset of Monsoons; and November-December, the secondary breeding season after the rainy season, are almost similar. The mean maximum temperatures ranges from 31.1°C to 33.5°C in April-May and 31.6°C to 33.8°C in November December. During the rest of the year it remains 2–5°C lower. The mean minimum temperature during April-May for both areas is highest i.e. 25.1 to 27.8°C. In November-December it again rises but only upto a maximum of 24.3°C.

The mean relative humidity for both the areas in April-May remains 72-75%. It increase up 91% during the rains and again drops to 50% to 74% in November-December.

The mean monthly rainfall for Ratnagiri and Goa during April-May is 0.00 mm to 64.1 mm. It shoots upto 866 mm to 1417 mm during the rains and again drops down to 0.00 mm to 55.7 mm during November-December.

The mean length of the day increases during April-May at Ratnagiri and Goa ranging from 12.5 to 13 hours. In November-December it is decreasing from 11.3 to 11.1 hours. But we have to consider the amount of Sunshine which increases suddenly after the cloudy days of the rainy season.

Another, rather strong factor accredited with the initiation of avian breeding which could not be ascertained directly is the "amount of food available for the nestlings. But as the House Crow almost entirely lives off the Human race; it might be safe to presume that the amount of food available to House Crow in both these areas in November-Decembe is not substantially less than that available in April-May.

TABLE I

RATNAGIRI

Year	*Jan.*	*Feb.*	*March*	*April*	*May*	*June*	*July*	*Aug.*	*Sept.*	*Oct.*	*Nov.*	*Dec.*
						Mean of daily maximum temperature °C						
1968	30.2	29.2	32.1	31.5	31.8	30.8	28.9	29.1	30.0	32.5	33.7	32.4
1969	31.5	30.7	31.4	33.0	33.5	31.4	28.9	29.3	28.3	32.2	32.5	33.1
1970	30.5	30.0	30.2	32.1	—	29.7	29.3	28.4	28.8	31.5	33.8	32.0
						Mean of daily minimum temperature C°						
1968	19.3	18.9	22.8	24.4	25.9	25.3	24.3	24.8	23.9	22.8	21.7	20.5
1969	18.8	19.9	23.0	26.3	27.6	25.1	24.5	24.3	23.6	23.7	23.3	21.7
1970	19.2	19.7	21.7	25.5	—	24.6	24.5	24.2	23 8	23.5	20.0	16.9
						Mean relative humidity (%) 0830 hrs. I.S.T.						
1968	66	74	66	75	73	85	90	86	89	73	56	60
1969	67	74	81	74	72	88	90	91	91	78	71	59
1970	73	72	74	73	—	89	87	90	91	82	50	53
						Rainfall (mm)						
1968	0.0	0.0	0.3	13.2	0.0	728.2	717.4	166.1	203.3	113.1	1.3	0.0
1969	0.0	0.0	0.0	0.0	0.7	654.4	1417.7	422.6	740.5	37.6	55.7	0.0
1970	0.0	0.0	0.0	0.3	—	1020.6	850.8	639.3	166.3	30.6	0.0	0.0
						Maximum possible hours of sunshine (length of day—Bombay)						
	11.2	11.5	12.0	12.5	13.0	13.3	13.2	12.8	12.2	11.8	11.3	11.1

TABLE II

MARMUGOA

Year	*Jan.*	*Feb.*	*March*	*April*	*May*	*June*	*July*	*Aug.*	*Sept.*	*Oct.*	*Nov.*	*Dec.*
						Mean of daily maximum temperature °C						
1968	29.7	28.6	30.8	31.2	31.1	29.6	28.1	28.5	29.0	30.6	32.5	31.6
1969	30.3	30.0	—	32.2	32.5	29.9	28.4	28.8	28.0	30.4	31.6	32.4
1670	—	29.8	29 8	—	—	29 9	29.2	28.2	28.9	31.4	33.8	32.6
						Mean of daily minimum temperature C°						
1968	21.1	21.8	24.1	25.1	26.3	25.0	23.7	24.3	24.1	23.7	23.6	22.5
1969	21.2	22.3	—	27.0	27.8	24.6	24.2	24.2	23.6	24.4	24.3	23.6
1970	—	22.1	23.5	—	—	24.5	24.0	23.9	23.8	24.7	23.0	19.8
						Mean relative humidity (%) 0830 hrs. I.S.T.						
1968	65	75	70	74	72	87	89	86	87	77	60	62
1969	66	74	—	73	72	86	86	—	89	80	74	62
1970	—	71	76	—	—	89	88	90	86	83	60	54
						Rainfall (mm)						
1968	0.0	0.0	0.0	64.1	6.8	644.3	1062.4	148.0	116.8	181.8	16.4	0.0
1969	0.0	0.0	—	1.5	2.2	866.5	596.5	283.7	574.5	30.5	75.1	0.2
1970	...	0.0	0.0	0.2	0.0	768.9	661.6	975.1	200.1	21.9	0.0	0.0
						Maximum possible hours of sunshine (Length of day—Bombay)						
	11.2	11.0	12.0	12.5	13.0	13.3	13.2	12.8	12.2	11.8	11.3	11.1

On account of the foregoing observations I am inclined to believe that some House Crows breed at Ratnagiri and Goa again after rains in November-December because climatic factors involved in breeding of Crows are somewhat duplicated at that time. This belief is further strengthened by a comparison of the climatological data of Poona (Table III), where the House Crow breeds only once a year in April-May, to that of Goa and Ratnagiri. At Poona we find that the mean maximum temperature during April-May is 37.5°C to 39.4°C. In November-December it never rises above 31.2°C. Similarly the mean minimum temperature of 19.8°C to 23.8°C of April-May drops further down to 6.6°C-16.7°C. The mean relative humidity in November-December, 58% to 70% is much higher than that of April-May, which is only 40% to 58%. The mean monthly rainfall in April-May (0.00 to 48.3 mm) is much more than that of November-December (0.00 to 13.2 mm).

The climatic conditions, of April-May at Ratnagiri and Goa are duplicated to some extent in November-December but they are not the "optimum" to effect the whole population. Skutch (1950 : 212) came to the same conclusion after his prolonged studies on Central American birds. He (Skutch 1950 : 212) concludes "If any single astronomic or climatic cycle tends directly to stimulate the reproductive activities of birds, its action is so weak that any species which finds conditions peculiarly favourable for reproduction at some divergent season of the year may escape its control".

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TABLE III

POONA

Year	*Jan.*	*Feb.*	*March*	*April*	*May*	*June*	*July*	*Aug.*	*Sept.*	*Oct.*	*Nov.*	*Dec.*
						Mean of daily maximum temperature °C						
1968	28.4	31.9	34.7	37.9	37.8	33.2	28.5	27.5	30.4	31.2	29.9	29.4
1969	30.2	33.6	37.3	39.4	38.2	32.7	28.1	27.8	28.4	32.9	31.2	29.3
1970	30.0	32.8	35.7	38.4	37.5	31.0	28.1	27.0	28.4	31.7	30.4	29.1
						Mean of daily minimum temperature °C						
1968	10.0	11.3	16.1	19.8	21.4	23.3	22.3	21.4	21.0	16.6	12.3	10.7
1969	9.9	12.2	16.8	21.2	23.8	23.3	22.5	21.4	20.9	17.6	16.7	13.1
1270	11.2	13.8	16.0	21.5	23.5	22.9	22.0	21.7	20.8	18.3	10.3	6.5
						Mean relative humidity (%) 0830 hrs. I.S.T.						
1968	77	64	51	40	47	71	82	81	82	75	67	67
1969	71	59	48	46	53	75	83	87	84	69	70	60
1970	68	67	49	46	58	78	85	88	83	80	58	63
						Rainfall (mm)						
1963	0.1	0.0	0.9	7.0	0.0	67.1	89.2	60.0	138.6	87.8	11.0	0.4
1969	0.0	0.0	0.0	5.5	0.0	118.5	276.2	214.7	118.2	6.3	13.2	0.4
1970	0.0	0.0	0.0	3.3	48.3	84.5	132.9	79.6	39.4	108.8	0.0	0.0
						Maximum possible hours of sunshine (Length of day—Bombay)						
	11.2	11.5	12.0	12.5	13.0	13.3	13.2	12.8	12.2	11.8	11.3	11.1

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Pledge

Convinced of the fundamental inportance of conserving the natural environment, upon which rests the foundation of human civilisation, I solemnly pledge that I will spare no efforts to preserve our vanishing wildlife and our dwindling forest areas which our generation holds in trust for posterity.

The Tiger will Survive

By

K.S. Sankhala

Director, Project Tiger

For untold centuries India has been home for the tiger though ecological studies indicate that its original home is the cold temperate land of Siberia from where it has migrated. He is at home in all the habitat types in India. Temperature as high as 48°C in Dholpur, Kotah, Ranthambhor and as low as below zero in the sub-mountain region of the Himalayas, bone dry hot winds of arid lands of Rajasthan and moisture soaked air of the wet region of Assam do not bother him. He does not mind rugged hills of the Shiwaliks or broken lands of the Chambal ravines. He is equally at home in the flat plains of the Tarai, well-drained region of the 'Bhabhar', of the muddy swamps of the Sunderbans. He lives in open bushland of the west as well as the impenetrable evergreen forests of the eastern regions of India. He drinks clean sweet water of the mountain streams and also thrives on the muddy, backish back-water of the tidal swamps of the Sunderbans. He shares the habitat without fuss with the other co-predators, the ferocious wild dogs. All this is proof that the tiger is highly adaptive. He has the capacity to adjust to a wide range of habitats. It is this quality which explains his presence even in the highly disturbed and denuded Indian jungles of today.

The tiger's needs are limited—only good ungulate (hoofed animals) population, undisturbed ambush cover from which he can spring a surprise attack, place to rest and bring up the young ones and, of course, water to drink. The tiger belongs to a biologically fertile species. It matures at the age of four to five years, retains reproductivity for about ten years, and disappears immediately after it has discharged its biological function at the age of 17 to 18 years. According to my study, the sex ratio of tiger and tigress is about 48 : 52, females being 10 per cent more than males. We also know that though the average number of cubs born in one litter is 2.9, the survival is only 1.9 per litter. But the ultimate survival rate after the many hazards a cub has to pass through is less than one per litter. Since cubs remain with their mothers for 20 to 24 months, tigress delivers cubs only once in two years.

With this vital biological information we may attempt to calculate the growth rate of tigers under normal conditions. We find that in a population of 100 there are about 52 tigresses. Assuming that this sex-ratio exists uniformally in all age groups, there are likely to be 26 tigresses in the reproductive group at a time. Of these, 13 tigresses can be expected to deliver litter every year. With our estimate of their survival rate, we find that less than 13 tigers are added every year to a total population of 100 tigers. Providing again for the many imponderables that exist in the jungles, it would be safe to consider the reproduction rate of tigers to be half of this figure, that is about six per cent.

This is almost the same as that of the lion, as estimated by Schaller in Serengeti. And the lion is in no danger of extinction. For a predator like the tiger the reproductive rate appears to be quite satisfactory.

By habit, the tiger is a solitude loving animal and is distributed over a wide range of environmental conditions. So, at any given time, there are always some group which are not exposed to adverse conditions or natural calamities. This ensures survival of at least some members of the species, and this should always be sufficient to revive the race in situations created by natural adversities. If, like the lion, the tiger also had been living in prides, it would have been picked up by trophy hunters like sitting ducks and massacred in groups to feed the booming trade in fur. Its living style has been the major factor in the preservation of its race in spite of man's wanton cruelty. Fortunately also, the species has also not acquired any "specialisation" in its behaviour' which could prove detrimental to its further preservation. The tiger's method of preying is free-style and feeding habits are non-ceremonial. A tiger does not hesitate to eat a live animal or even an animal killed by others. Faced by acute hunger he even eats diseased carcasses and is not known to spare crabs and fish.

The mother-cub relationship among tigers is governed by a degree of intensity which is touchingly human and tigresses take good care of their cubs. She is not a cannibalistic mother like the lioness but brings up her young ones by a process of elaborate training till the time cubs jump the family bond or the mother drives them away to make room for the new litter. Above all, the members of a tiger family do not hold territories or indulge in fights to defend their preserves, resulting in waste of energy and loss of life nor does the species have cannibalistic tendencies which would prove detrimental for the survival of the race.

The tiger is not a nervous type by any means. He will not abandon a habitat because of human disturbance unless he is physically driven out. He lives in the vicinity of villages waging no war on man or his cattle. He tolerates man and modifies his ways and habits to adjust to a life of co-existence. This is amply demonstrated by the tigers living in Sariska where human disturbance both by wood-cutters, visitors and also by cattle is very high. He uses the same road at night which has been used by hundreds of men during the day. He visits the same waterhole which has been used by man but an hour earlier. He waits for the passing of the last bus or the last dying sound of a temple bell, to start his hunting prowl. All this is proof that if left alone, the tiger is not a species doomed to extinction in the grand process of evolution. Its extinction in any place or region is due to causes other than the natural ones.

Based on this knowledge about the life of the tiger and the cause of depletion of its population a project has been formulated. It provides for the elimination of all factors

that have contributed to the destruction of its habitat by forestry operations, grazing and movement of man; loss of its natural prey population by poaching and wanton killing and direct killing of tiger both for trophy and trade. Project-tiger is the name given to a countrywide campaign that is now on to save the tiger together with its habitat.

India was once very rich in tiger-lands, but for economic reasons it is not possible to preserve all of them. That would mean elimination of forestry operations. It was, therefore, decided to identify certain areas which have proven potentiality to be developed as nuclei of wild-life, including tiger reserves. The criteria for selecting an area for this purpose was that it should be a representative habitat type. The habitat should be exposed to least disturbance; population of animals including tigers should be fairly adequate or the development potential must be high; and there should be no other competing factors like prospects of mining or harvesting valuable timber or any other economic or political consideration. And as far as possible the reserves must be situated in different States of the Union so that each State can afford to give the Tiger Reserve a deserved priority in managing that area. Sometimes it may not be scientifically correct but administratively sound and easy enough for execution. Nine such areas have been demarcated: Manas in Assam; Sunderbans in West Bengal; Palamau in Bihar; Simlipal in Orissa; Corbett Park in U.P.; Ranthambhor in Rajasthan; Kanha in Madhya Pradesh; Melghat in Maharashtra; and Bandipur in Karnataka.

A few more could have been added to the list. For example tiger reserves in the Bastar Plateu, another in the evergreen forest of Meghalaya, and still others in Tarai Duduwa of U.P., Sariska of Rajasthan and the famous Duars of Cooch-Behar in the West Bengal. But due to limited financial resources and other practical considerations, they have not been included. Slowly they too would be brought under the umbrella of the Project.

The tiger is a predator—a second stage consumer—who cannot be preserved in isolation. He requires primary consumers—prey animals (ungulates) which depend on producers—vegetation, forest and savannahs. These producers depend on converters like soil and micro organisms. Truely, the tiger is at the apex of the biological pyramid. Therefore, any plan to preserve the tiger has to preserve the whole range of its prey population and their habitat. This requires the through knowledge of the whole eco-system of the tiger land including socio-economic human behaviour, involving not a single discipline but a multi-disciplinary approach. The Project Tiger is an attempt in that direction. Fancy ideas of wildlife management by artificial manipulation of the habitat to increase wildlife population to an artificial level, has been guarded against. Its broad concepts are clear: that it is committed to the philosophy of total environmental preservation and that Nature will be allowed to play its part fully. The management will be limited to eliminating or minimising human disturbance or to repair the damage done by man.

Though the object of the Project is to manage nine eco-units, the habitat and population of tigers outside these units have not been ignored. The first step has already been taken. The tiger has been declared India's National Animal and has been accorded total protection throughout the country. The exports of tigers, either living or dead has been totally banned. Attempts have been made to ban the import of tiger-skins in the receiving countries through an international convention to which India, the U.S.A., the U.K. and other countries are signatories. Even possession of tiger-skins is being controlled to ensure that no illegal trade in tiger-skins flourishes. Attempts are also being made to preserve the tiger niches throughout its range by manipulating forestry practices to strike a compromise between wildlife and forest production.

India's tiger reserves are, of course, not as large as the Banff National Park for the bison in Canada, Serengeti National Park for the lion in Tanzania, or Tsavo National Park for the elephant in Kenya. Because of the high density of human population in India, there are no large tigerlands in India that are completely free from human disturbance. Still, in spite of the heavy pressure on land and on forest produce, an area of 12,000 sq. km. has been set aside under the Project Tiger as tiger reserves to be scientifically managed at a cost of Rs. 40 billon. The reserves have been selected in different habitat types in India, where conditions are still favourable and tigers are found in numbers that make it possible to build up population units through scientific management.

Not all the reserves at present have a genetically viable population of tigers. The plans prepared under the Project Tiger provide for the development of the habitat, its wildlife and the tiger population in these reserves to the optimum level. The basic requirements of all wild animals are food, water and protection. In the foregoing description of the tigerlands, we have noticed that in some areas one or more of these needs are limited. In the dry deciduous and moist deciduous forests, the forage is being conserved by eliminating competition from domestic cattle and protecting it from fire. Its production will be increased by repairing the damage done by the past activities of man causing soil erosion, and depletion of land by soil and moisture conservation and pasture development techniques like water spreading devices to produce more. Water is an important factor in maintaining wildlife population. Most of the reserved areas have rich forage, but they are not attractive to wild animals because of want of water. These grazing lands remain unutilised. Contruction of water-holding devices like anicuts, dug-outs and development of springs to conserve water and make it available for longer duration has been planned which will help to utilize the whole range.

The reserves are being strictly protected against all types of hunting and poaching and all other forms of human movement likely to damage or disturb wildlife. The areas are being kept closed to encroachings through installation of improved wireless systems. Specially screened selected and trained hands of wildlife officers have been posted to look

after these reserves. They have been provided with swift transport and are being fully equipped to meet any challange by poachers.

Controlled fires are now recognised as an important management tool in maintaining the plant community at a desired ecological state. For example, there are varieties of grasslands which, if not burnt in winter, would be unfit for grazing in spring and summer. The coarse grasses require controlled burning so that new sprouts are available for wild animals to graze. Evergreen vegetation is less favoured by wild animals and it is through fire that the plant succession in moist and wet habitats is held back from reaching a stage which may be disadvantageous to wildlife. All uncontrolled fires, accidental or intentional, are harmful as they burn all the available fodder, kill ground fauna and plant regeneration and dry out waterholes. These fires are proposed to be prevented in the tiger reserves by the project authorities.

Since the tiger areas are far removed from one another with no corridors for intermingling of the different racial strains, it is necessary to arrange artificial intermingling in order to maintain genetically healthy populations. This is an artificial operation, but is being provided for to bridge the gaps created by man. It is planned to be undertaken with the help of indigenous methods of trapping tigers and transferring them to genetically new areas.

The development and maintenance of the reserves at an optimum level is the main object of the Project Tiger. Since the reserves covered by the Project are surrounded by similar forest areas, the optimum level of animal population will be automatically maintained by spilling over the excessive population of tiger and other wildlife from the tiger reserves to the adjoining forest areas. This will help to restock the forests with life from these restocking centres.

The Project Tiger provides for research on the various aspects of field biology of wildlife and training of personnel. Special efforts are being made to study the daily life of tigers through tracking and long hours of observations. Care is being taken that the tigers are not made guinea pigs for experimenting new hardwares or electronics or drugs.

To popularise the Project and to create awareness and enthusiasm among the people, particularly the young men and women, for this programme of tremendous international importance, a public relations plan has been worked out to increase the awareness of the people through radio, TV, films, newspaper columns and other media. Project Tiger is a youth activity and, therefore, it plans to encourage youth participation in its various plans. A children's Safari programme to visit tiger reserves is being planned. Tigers are also found in Bangla Desh, Bhutan and Nepal and similar projects are being planned in these countries. Bilateral arrangements are being finalised to help in preserving the tigers. Bhutan and India have already signed an agreement to develop the Manas Tiger Reserve.

Since racial and political barriers have been broken, distances abridged by modern modes of communication and air transport, and a wider and more lively interest in what goes on outside one's own country has developed, the wildlife of a country or a continent is no longer a matter of interest to that country alone. International concern has been voiced over the dwindling population of tigers, the most magnificent of the world's predators, in its ancient homes. The saving of the tiger in India, the country in which it is still left in some hundreds, has become an international issue and responsibility. The call to support the project of the World Wildlife Fund has received prompt response from the world over. And small or big donations in cash or kind are pouring in. The WWF has already collected $ 600,000 against its target of one million dollars. The imaginative publicity campaign through painting contests of children and selling of picture stamps to collect funds has reached every door. The WWF support comes to the project in the form of equipment and advice on management plans and training facilities for the staff. The most important help is that it creates a right climate and provides confidence for those who are implementing the project.

Since tigers are being given undisturded homes where a wide range of prey animals are being developed, there is every chance that that the species will be saved from extinction. It is too early to predict the exact outcome of this effort, but is certainly not too much to hope that ultimately the tiger will be saved in India and restored to a less precarious status than now.

Courtesy—*Animal Citizen*

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A description of one day old chick of Chukor Partridge, *Alectoris chukar*

By

B.S. Lamba

Zoological Survey of India 13, Subhas Road, Dehra Dun, U.P.

In the month of May 1975 I came across one day old chicks of Chukor Partridge in the Chukor pens of Shri G.D. Jayal of 6, Cross Road, Dehra Dun.

Ticehurst (in Salim Ali, 1969:20) has described the Chick (in down) of this Species. It reads "A broad band from bill over crown to nape chesnut, outlined in dark brown; from base of bill a broad creamy white superciliary streak surmounting a narrow dark brown one. On the dorsum a broad median chestnut band, and on each side of it a narrow creamy white streak. Wings and back of thighs girdled brown and cream. Underparts creamy grey; a short dark brown moustachial streak from base of bill".

On comparison it was observed that one day old chick differed from the above description in the following respects :—

1. Superciliary streak was a broad dark brown one enclosed by thin white ones dorsally and ventrally.

2. Another dark brown streak runs on the outside of the each of the two narrow creamy white streaks running parrallel to the broad median chestnut band. (Photograph)

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An abnormally long beak observed in a captive Chukor Partridge, *Alectoris chukar chukar*

By

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In April, this year, I had an opportunity to visit the Chukor *(Alectoris chukar chukar)* pens of Shri G.D. Jayal of 6, Cross Road, Dehra Dun. Shri Jayal is a very keen naturalist and has been keeping about a dozen birds of this species as pets for the past fifteen years or so in addition to love birds, a variety of acquarium fish and dogs. He has been trying to breed these chukar partridges in captivity all these years with the help and guidance of Dr. V.K. Sharma of the Doon Veterinary Clinic. Their biggest problem has been to get the eggs hatched by the parent birds. The captive females mate and lay the eggs during the breeding season (April–July) but do not incubate. Once Shri Jayal got the eggs hatched by a domestic hen. The hatching success was about 70% but all the young ones died before they were about 9 weeks old.

As I have worked on the breeding biology of birds for the past 22 years or so Shri Jayal discussed with me his chukor breeding problems. While observing the birds I noticed one male having a rather long and curved beak. On enquiry I was told by Shri Jayal that this was the second time when one of his chukor's had grown an anormally long beak. Another bird had done it about six years back but that one too was a young male. I photographed the abnormal beak as it may be of interest to your readers. The normal beak is also shown by its side for a comparison. This beak measured 44 mm as against the normal length of 19-21 mm (Salim Ali, 1969 : 20).

This year again the services of a "Kudak Murgi" were employed to hatch about 15 eggs, the product of three females. The incubation started on 26th April and the eggs hatched on 18th May. It works out to be 22-23 days. This too may be of interest to your readers as the incubation period of this species in nature, has not been recorded so far. Dr. Sharma is planning to vaccinate these fledglings soon against the well known poultry diseases. We hope the young will survive this time.

Hirundo smithii nesting in a residential house at Dehra Dun

By
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Hirundo smithii is known to nest "almost exclusively in the neighbourhood of water, under the cornices of bridges, under culverts beneath which some little pool remains, under over hanging shelves of rock or kunkar, projecting from the faces of stony or earthy river cliffs, and in cells of buildings over looking the water. Occasionally they make their nests inside buildings which are not over water. Thus Jones obtained one nest in Patiala State, at about, 6000 feet elevation attached to a rafter in a deserted shed...Adams in Sambhur obtained a nest in an old rest house (Baker 1934 : 116). "Nest,.....attached bracket wise to a vertical surface e.g. wall or rafter in a veranda..." (Salim Ali 1972 : 63).

This species has not, as far as I know, been recorded nesting inside inhabited houses. At Dehra Dun I found a pair of this species building actively in July 1974, in the veranda of No. 22 Travor Road, inside the Forest Research Institute Campus. One of the two main entrances of the residence opened in the veranda. The veranda was also being used regularly for drying clothes. Occasionally, the dog of the house, an alsatian, was also tied in the veranda. The dog and the children were not bothered by the birds but all grown ups, while using the veranda, were sallied at threateningly by both the birds.

The birds started their building activity around 8 O'clock in the morning and continued till about 6 O'clock in the evening. The mud for the nest was brought from an open irrigation drain about 30 metres away. Individual pallets were added after intervals of 20-35 minutes. The nest was completed, linning and all, in 9-10 days. Both birds occupied the nest at night, after its completion.

First egg was laid after two days of the cessation of building activity. Three more followed at intervals of 24 hours. The eggs were laid in the mornings before 9 a.m. The incubation was rather lose. The incubating bird took off as soon an adult entered the veranda. The first egg hatched after 15 days of its being laid. The other three hatched after 14 days. Both parents brought food for and fed the young. The rate of feeding was averaged 43 visits (Both parents) an hour for three sucessive days between 9.00 a.m. to 10.00 a.m., when the young were about a week old. The nestlings started flying out of the nest when they were about three weeks old. The whole family roosted in the nest at night.

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Fauna of Rajaji Sanctuary (District Saharanpur), Uttar Pradesh 2. Fish

By

Akhlaq Husain

Zoological Survey of India, Dehra Dun

Introduction

Considerable interest has been shown in the fish fauna of the areas adjoining the Rajaji Sanctuary, District Saharanpur (Day, 1877-78; Fowler, 1924; Hora and Mukerji, 1936; Lal and Chatterji, 1962; Singh, 1964; Mahajan, 1965; Husain, 1970; Tilak, 1970; Tilak and Husain, 1974 and 1975) but very little attention has so far been paid to fish fauna of the sanctuary. The importance of the fish fauna of this area is all the more felt because of the peculiar ecological conditions existing there. The Sanctuary was constituted in the year 1948 and at present covers an area of 246.98 sq. kms. It lies in Siwalik Forest Division of Saharanpur district, Uttar Pradesh. It lies at a distance of 22 kms. south-east of Dehra Dun on the main Dehra Dun–Saharanpur road. The Sanctuary area is extremely dry except for some perennial water sources in the upper reaches of the streams (called locally 'Raos'). The following streams or Raos were surveyed for this purpose and altogether 19 species belonging to 13 genera, 5 families and 3 orders have been recorded. All the species have been recorded from this area for the first time. This paper is the second in the series on the fauna of Rajaji Sanctuary.

(i) Mohand Rao in Mohand Block
(ii) Chilawala Rao in Chilawala Block
(iii) Chikna Rao in Chilawala Block
(iv) Gaj Rao in Gaj Block
(v) Bhinj Rao in Andheri Block
(vi) Dhaulkhand Rao in Dhaulkhand Block
(vii) Ranipur Rao in Ranipur Block

Systematic List

Class : Osteichthyes
Sub-Class : Actinopterygii
Division : III
Super-order : Ostariophysi
Order : Cypriniformes (Carps & Loaches)
Family : Cyprinidae (Carps)

(1) *Barilius bendelisis* Hamilton
(2) *Barilius bola* Hamilton
(3) *Barilius vagra* Hamilton

(4) *Brachydanio rerio* (Hamilton)
(5) *Crossocheilus latius* (Hamilton)
(6) *Esomus danricus* (Hamilton)
(7) *Garra gotyla gotyla* (Gray)
(8) *Labeo dero* (Hamilton)
(9) *Puntius sophore* Hamilton
(10) *Puntius ticto* Hamilton
Family : Cobitidae (Loaches)
(11) *Botia dayi* Hora
(12) *Lepidocephalus guntea* (Hamilton)
(13) *Noemacheilus beavani* Gunther
(14) *Noemacheilus botia* (Hamilton)
(15) *Noemacheilus denisonii* Day
(16) *Noemacheilus rupecula* (McClelland)
Order : Siluriformes (Catfishes)
Family : Amblycipitidae
(17) *Amblyceps mangois* (Hamilton)
Family : Sisoridae
(18) *Glyptothorax brevipinnis brevipinnis* Hora
Order : Channiformes (Murrels or Snake-heads)
Family : Channidae
(19) *Channa orientalis* (Bloch and Schneider)

Acknowledgements

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.....(1975). A new sisorid catfish, *Laguvia ribeiroi kapuri* (Sisoridae, Siluriformes) from Uttar Pradesh. *J. Inland Fish. Soc. India*, 6 : 1–5, figs. 1-3.

India promotes refuges for urban wildlife

The Government of India in December took action toward establishment of refuges for wildlife in suitable areas of urban districts.

In a message to State Governments and Union Territories, attention was called to zoological parks, gardens, playgrounds, fallow lands and marshes as examples of areas suitable. The message said these area "may be declared" as urban wildlife refuges. A surrounding belt would be kept free of industries and other disturbances.

JIM CORBETT—A LEGEND

He was the man ! A man he was,
To turn sport into a humanitarian cause.

Son of India, born of its soil,
He loved its wilds where furies boil.

Nature lover—Nature in the ray,
That often turned bloody in the 'tooth and claw'.

Nature shaped his hunter's instinct,
Nurtured and developed a personality distinct.

Fear he knew not, superstitions none,
Killers he killed, but all terrestrial ones.

The Temple Tiger, Man-eaters of Kumaon,
Leapords of Rudraprayag, terrors of every gaon.

No one was safe from the killer's crafty art,
Fear of death lurked silently in every heart.

No one could sleep or move at will,
Aware of the killer that was out to kill.

'Its is a spirit' said many, 'or a curse from above,
A shadowy devil that kills for love.

Or a 'sadhu' that adopts a beastly shape,
A degenerated soul without a hope.

So it avengeth on God's loved best,
Man, who himself is fallen from that crest.

Else the abode of the Gods is now run amuck,
For, when Kali Yuga ruleth all good is suck'.

But in every age comes a man to redeem,
And every man is born with a mission supreme.

So in the midst of this holocaust,
Came Jim Corbett, a saviour at last.

We honour his name, for ever his glory rings,
To every heart in the Himalayas his name happiness brings.

India honours him, so do all,
A name now enrolled on Heaven's roll call.

—Shamsher Singh—Saint

———

A Check-List of Molluscs of Himachal Pradesh, India
Part II

By
H.P. Agarwal

Family HALICIDAE

Genus *Eulota* Hartmann, 1842
Eulota radicicola (Benson)

1848. *Helix radicicola* Benson, *Ann. & Mag. Nat. Hist.* ser. 2, ii: 161.
1914. *Eulota radicicola* Gude, *Fauna Brit. India*, Mollusca, II: 205.
Distribution in Himachal Pradesh: Simla.

Genues *Plectotropis* Martens, 1860
Plectotropis huttoni (Pfeiffer)

1842. *Helix huttoni* Pfeiffer, *Symb. Hist. Helic., ii*: 82.
1914. *Plectotropis huttoni* Gude, *Fauna Brit. India*, Mollusca, II: 211.
Distribution in Himachal Pradesh: Simla.

Genus *Vallonia* Risso, 1826
Vallonia ladakensis (Nevill)

1878. *Helix* (*Vallonia*) *ladakensis* Nevill, *Scient. Results Second Yarkand Mission*, Mollusca, p. 4.
1914. *Vallonia ladakensis* Gude, *Fauna Brit. India*, Mollusca, II: 226.
Distribution in Himachal Pradesh: Spiti.

Family ENIDAE

Genus *Ena* Turton, 1831
Ena smithei (Benson)

1865. *Bulimus smithei* Benson, *Ann. & Mag. Nat. Hist.* ser. 3, *xv*: 15.
1914. *Ena smtthei* Gude, *Fauna Brit. India*, Mollusca, II: 235.
Distribution in Himachal Pradesh: Fagoo.

Ena vibex (Kuster)

1845. *Bullimus vibex* (Hutton) Kuster, *Conch. Cab., Bulimus*, p. 57, pl. 17, figs. 5, 6.
1914. *Ena vibex* Gude, *Fauna Brit. India*, Mollusca, II: 236.
Distribution in Himachal Pradesh: Simla.

Ena arcusta (Kuster)

1845. *Bulimus arcuatus* (Hutton) Kuster, *Conch. Cab., Bulimus*, p. 56, pl. 17, figs. 1, 2.
1914. *Ena arcuata* Gude, *Fauna Brit. India*, Mollusca, II: 238.
Distribution in Himachal Pradesh: Simla and Narkanda.

Ena sindica (Reeve)

1848. *Bulimus sindicus* (Benson), Reeve, *Conch. Icon., v, Bulimus*, p. 47, fig. 303.
1914. *Ena sindica* Gude, *Fauna Brit. India*, Mollusca, II: 145.
Distribution in Himachal Pradesh: Mandi.

Ena eremita (Reeve)

1849. *Bulimus eremita* (Benson) Reeve, *Conch. Icon., v, Bulimus*, pl. 78, fig. 573.
1914. *Ena eremita* Gude, *Fauna Brit. India*. Mollusca, II: 247.
Distribution in Himachal Pradesh: Simla.

Ena kuluensis (Kobelt)

1902. *Buliminus* (*Subzebrinus*) *kuluensis* Kobelt, *Conch. Cab.* p. 938, pl. 132, figs. 3, 4.
1914. *Ena kuluensis* Gude, *Fauna Brit. India*, Mollusca, II: 255.
Distribution in Himachal Pradesh: Kulu.

Ena purii Ray

1951. *Ena purii* Ray, *Rec. Indian Mus.*, XLIX: 31.
Distribution in Himachal Pradesh: Pulga in the Parbatti Valley, Kulu Sub-division.

Genus *Cerastus* von Martens, 1860
Cerastus segregatus Reeve

1849. *Bulimus segregatus* (Benson), Reeve, *Conch. Icon., v, Bulimus*, pl. 79, fig. 587.
1914. *Cerastus segregatus* Gude, *Fauna Brit. India*, Mollusca, II: 268.
Distribution in Himachal Pradesh: Simla; Chinab Valley.

———

Letters to the Editor

Dear Sir,

Vol. 16 of the "Cheetal" has a picture of a Caracal kitten on the cover. The photographer Ashok Singh presumably of the Forest Department smugly remarks of the satisfaction of seeing a Caracal in natural suroundings.

I would like to comment on the inhumanity which led to the depriving of a mother of her two kittens and a typical attitude which thinks that the destination of every wild animal should be a zoo. Such a nauseating outlook does not bade well for the future of Wildlife.

Yours faithfully,
Sd/. Arjan Singh

* * *

Dear Sir,

As mentioned in my note (P:51, Vol. 16, No. 3, Cheetal), the mother had left the cubs before I reached the spot. There was no possibility of her returning back as large number of labourers were working in the area. It was, therefore, considered prudent to provide the animals reasonable care and protection rather than leave them in the forest to be destroyed. The sweeping comment by Mr. Singh regarding a typical attitude that the destination of every wild animal should be a Zoo might have been true in the remote past, but today such comment is a travesty of truth.

Mirzapur, 23.6.75. Sd/. Ashok Singh

* * *

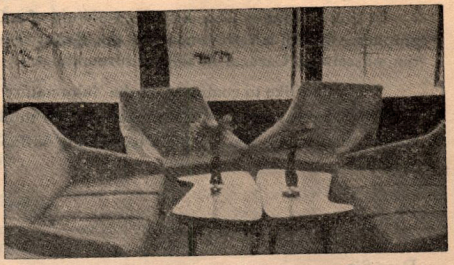
A dozen of letters have been received from different parts of India congratulating Ashok Singh on taking an outstanding photograph of Caracal. Scarcity of space does not permit their being printed.

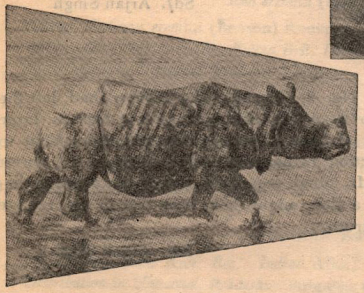
Yours faithfully,
Editor.

———

Have a drawing-room view of wild animals

VISIT





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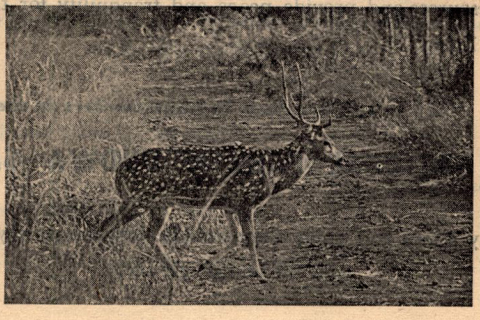

For details please cantact:—

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2. **Divisional Forest Officer,**
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Wild Life Preservation Society of India

1. The aims and objects of the Society are as follows:—

   (a) To promote interest in and impart knowledge regarding the preservation and conservation of all forms of wild life, particularly among the youth of the country.

   (b) To co-operate with the Govts. of India and States and with other Societies and Institutions having similar aims and objects in working for the interests of wild life.

   (c) To assist in enforcing and actively supporting the Forest Acts, Wild Birds and Animals Protection Acts and Rules etc. of States and the Indian Arms Act and Rules in so far as they pertain to wild life and to bring to the notice of the authorities any infringement of the same and to assist in the detection and prosecution of offenders in respect of such laws.

   (d) To advise and help the Govt. and wild life administrators in the formation, maintenance and protection of Sanctuaries and National arks, the preservation of wild life in general and rare species of India in particular and in the introduction of exotic species into the country, the rehabilitation of rare species etc. and in the revision on rational lines of the shooting and fishing rules, so as to conserve and increase wild life stocks.

   (e) To raise funds for the carrying out of the above aims and objects and to found and maintain museums, reading rooms and libraries of natural history in order to disseminate knowledge regarding wild life.

   (f) To promote sportsmanship in shikar and to recognise well regulated shooting and fishing, as a means of preserving wild life and fish so that through wise use the surplus may provide a recreational asset to the nation.

   (g) To carry out publicity and propaganda for the preservation of wild life in India by means of monographs, journals, films, film strips and other feasible methods.

   (h) To assist members of the Society in obtaining shooting and fishing facilities and facilities for viewing and photographing wild life in India.

   (i) To conduct research into the problem of Wild Life management in India, and in pursuance of this, to initiate, encourage and, where possible assist in projects for the study of threatened speceis and related subjects and to provide reference and research facilities for such work.

   (j) To carry on such other activities which will serve the above subjects.

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